ENGINEERING NEWS-RECORD

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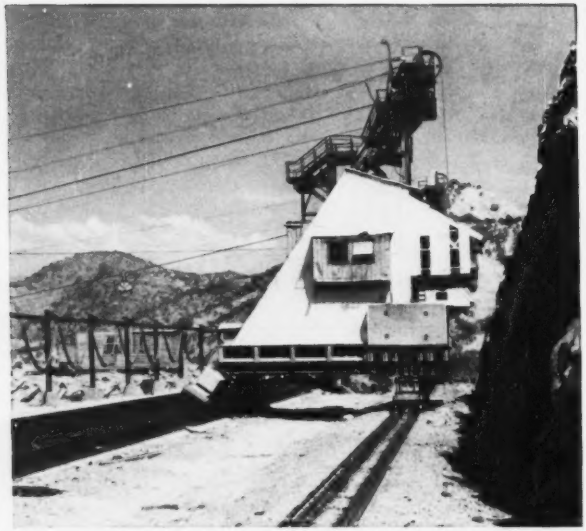


Cableway head tower, and tail tower across the canyon, are both driven on straight parallel tracks by G-E drives. Another set of towers for the service rig operates on the same tracks. Main cableway was built by Willamette Iron and Steel Co.

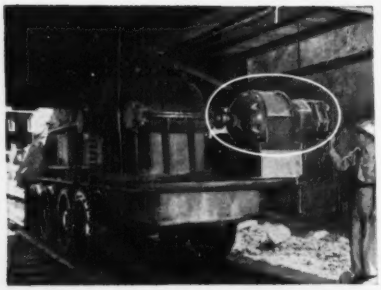
Cableway towers kept in line . . . electrically!

At Pine Flat Dam, G-E drives for movable head and tail towers prevent skewing, help keep pouring operations continuous!

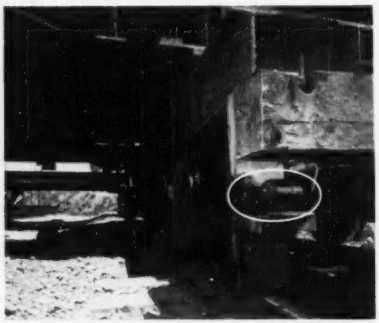
Here's an example of the versatility of electricity on construction jobs—a co-ordinated electric drive system that helps keep an important project ahead of schedule. It's at Pine Flat Dam on Kings River in California, where a modern, high-speed G-E powered cableway—together with another rig for service functions—has set a pouring record of 4000 yards in one day.

All motors and control for the main cableway tower-drives on this Corps of Engineers dam, being built by Pine Flat Contractors Associated Companies, have been supplied by General Electric. In addition, the electric devices to keep the two cableways on the track, safely apart, and correctly aligned across the 2420-foot canyon, were all co-ordinated for the job by G-E application engineers.

This kind of engineering help—in application, installation, and service—regularly supplements G-E drives and power distribution systems, helps *you* get the most from *your* electrified construction equipment. *General Electric Co., Schenectady 5, N. Y.*



Under the head tower, this G-E 75-hp wound-rotor induction motor is one of two that drive the tower. Motors for head and tail towers are controlled by a single master switch in the operator's station.



Tower alignment is maintained automatically. This selsyn generator, connected to a head-tower wheel, and another on the tail tower, feed signals to a differential selsyn which controls speed of the tower-drive motors.

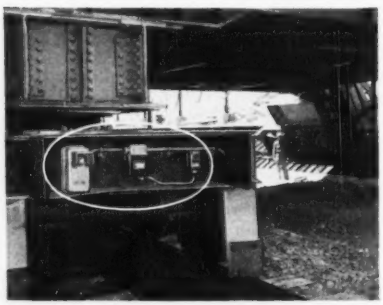


Photo-electric relays on each head tower automatically prevent the two rigs from colliding, and G-E limit switches keep towers from hitting stops at ends of the track. Thus operator can concentrate on spotting buckets.

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Member

Volume 148 MARCH 20, 1952 No. 12

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Improved block beams cut erection costs 52
You're burning dollars in your incinerator 55
Some new wrinkles on panel walls 58
Fast scroll case concreting 62
Backfill lessons on a 30-inch pipeline 68
Perspective—Biggest flood could have been worse 128

DEPARTMENTS

Reader Comment	10	Labor	40
Construction Trends	17	Municipal	45
Editorials	19	Legal Decisions	65
Construction Week	21	International	72
News of the Week	23	Obituaries	76
Construction Business	31	Men and Jobs	78
Financial	36	Meetings	81
Unit Prices	38	Construction Reports	84

New Products 115

Number of copies of this issue printed, 52,369

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Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.
Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

March 20, 1952 ENGINEERING NEWS-RECORD Vol. 148—No. 12
Member ABC and ABP

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 N. Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow ten days for change of address.

Please indicate position and company connection on all subscription orders.

Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada, $8.00 a year; $12.00 for two years; $16.00 for three years. Pan American countries, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A. Copyright 1952 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.

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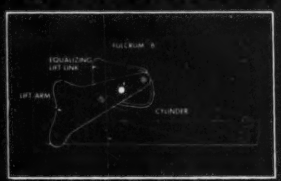

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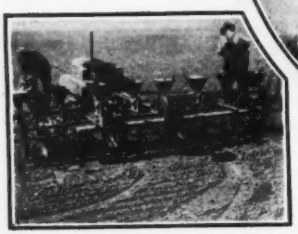

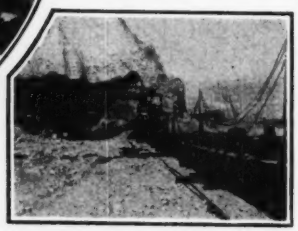

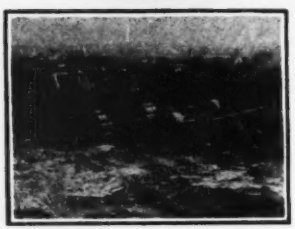

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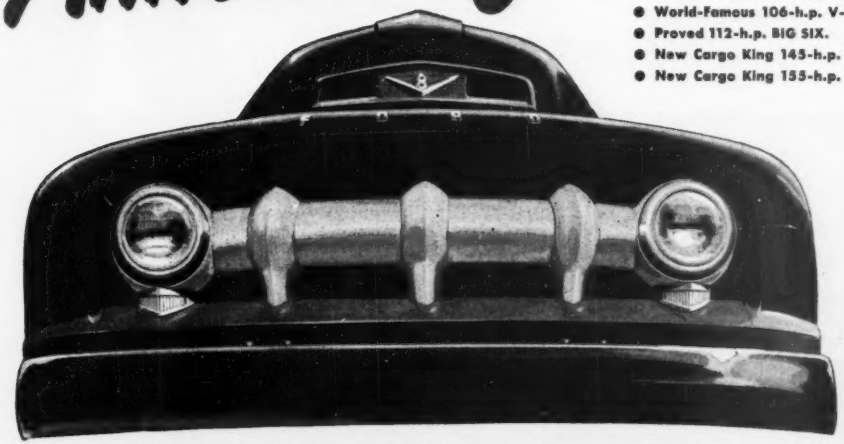

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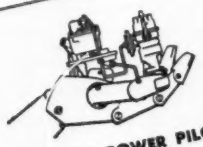

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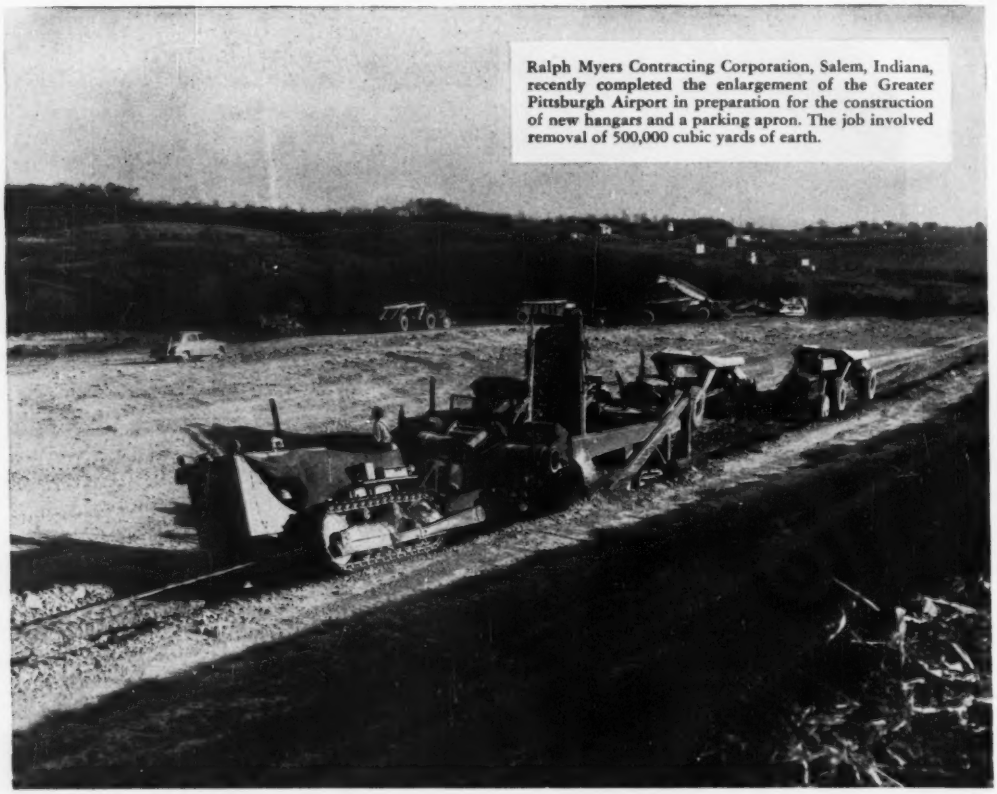

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READER COMMENT

Cofferdam collapse

Sir: It was very interesting to read about the collapse of the bridge-pier cofferdam in Jacksonville, Fla. (ENR Jan. 24, p. 29). The engineers are studying the unfortunate coincidence of unfavorable conditions which could cause this accident and the analysis of the structure is certainly in the best hands with Parsons, Brinckerhoff, Hall and Macdonald.

Meanwhile I want to point out one circumstance which will be overlooked sometimes. A network of bracing or other framing consisting of square panels only is an unstable one unless all the joints of the perpendicularly crossing braces are sufficiently rigid. Perpendicular joints of timber braces and struts even when executed properly and very neatly, as the picture of the complete cofferdam shows, are seldom rigid enough.

A tragic collapse of a cofferdam in sand occurred in 1934 during construction on the Berlin subway system. It caused the death of 17. The unusually deep and wide cofferdam was braced with perpendicular members only. The investigation and the published report pointed out that besides a design change which diminished the toe hold of the steel sheet piling, mainly the lack of diagonal bracing could be blamed for the failure.

This is probably less important for horizontal arrangement of braces than for bracing in the vertical plane. It seems to me, however, that greater safety can be attained when diagonal braces are applied at the corners and probably in some interior panels in both the vertical and horizontal direction. This slight additional provision would secure a greater rigidity of the bracing as a whole.

REMIG A. PAPP
Flushing, N. Y.

Successful prestressing

Sir: We were privileged, with many other engineers, to present a paper on our work in prestressed concrete at the First U. S. Conference on Prestressed Concrete, which was held at M.I.T in August. We do not agree, as Mr. Feld states in his letter (ENR Oct. 11, 1951, p 48), that the program "was definitely without inclusion of a practical approach."

In the 2½ years that our firm has been working with prestressed concrete, prestressed beams for 850 lin ft of state and county bridges, 17,000 sq ft of floor and roof space and 5,800 lin ft of stadium treads have

been completed from our designs.

All of the above structures have used prestressed concrete because the design proposed was cheaper than the original designs of steel or reinforced concrete. We recognize that the total volume of completed work is small but we are encouraged by the fact that plans now in process include a volume of work that is greater than the total work completed in the past 2½ years.

All the above work has been accomplished by adapting an American strand and fitting to an American, machine-made unit. We feel that the method is "American" and, as Mr. Feld desires, it may even be "homespun." Whatever the appellation, we submit that the above work could not have been accomplished, much less continued, if it did not include an economical and practical approach.

The economic advantages of prestressed concrete do not stem, as Mr. Feld suggests, from the use of "80% to 90% of the concrete strength and 90% to 95% of the reinforcing yield point as a working stress." Current design practice sets the permissible concrete stress at $0.30f'$ to $0.40f'$ and the steel stress at 0.60 to 0.70 the ultimate.

The steel stress in a prestressed structure in which the cracking load is above the design load will show very little increase above design live load. This, of course, is not true of reinforced concrete. Further, when a reinforced concrete structure is loaded slightly beyond the yield point of the steel, it will fail without the addition of load due to the characteristics of stress-strain curve of reinforcing steel.

The characteristics of the stress-strain curve of prestressing wire are entirely different from the above, and additional load can be applied to the structure long after the apparent yield point or proportional limit of the steel has been reached. In view of the above, a higher ratio of working stress to yield point or proportional limit seems to be justified in the case of prestressed concrete.

Regarding the teaching of prestressed concrete we must agree with Professor Winter (ENR Nov. 1, 1951, p 65) that "the basic principles of the mechanics and stress distribution of prestressed concrete can be explained in outline in one or two lectures." The same may be said of reinforced concrete with even less exaggeration. The basic principles of each must be recognized and promptly submerged by the many variations of practical application, where both reinforced and prestressed concrete must be used in conjunction with other

(*Continued on p. 14*)

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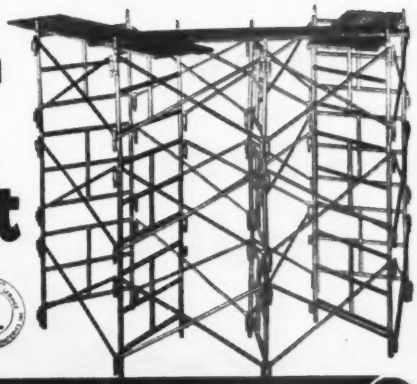

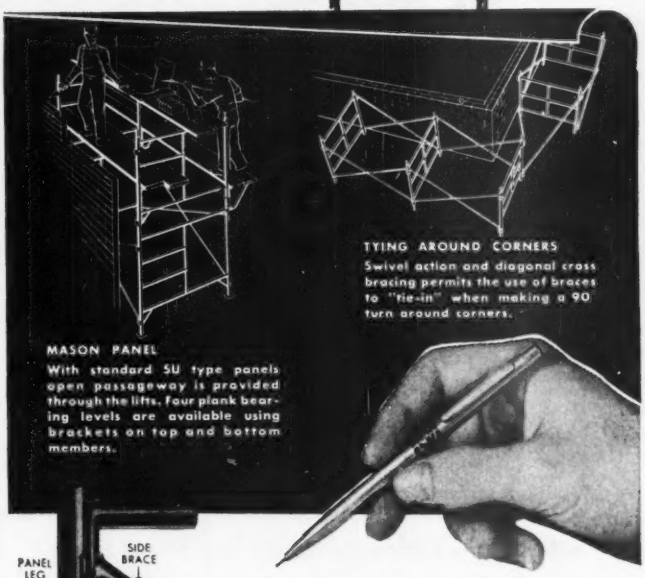
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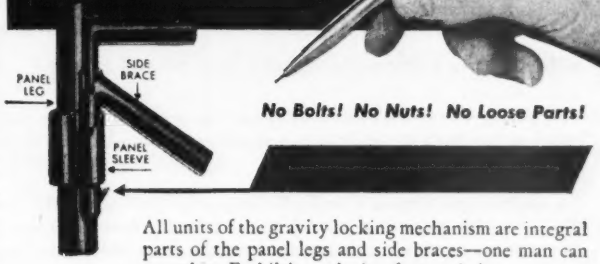

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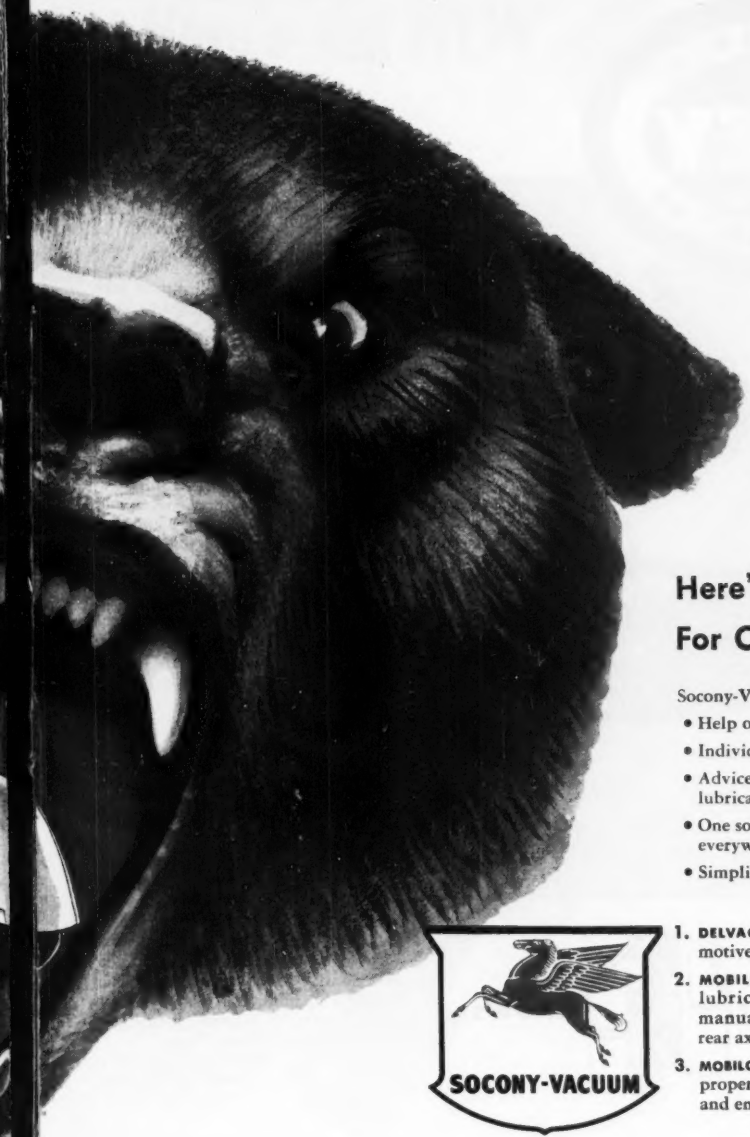

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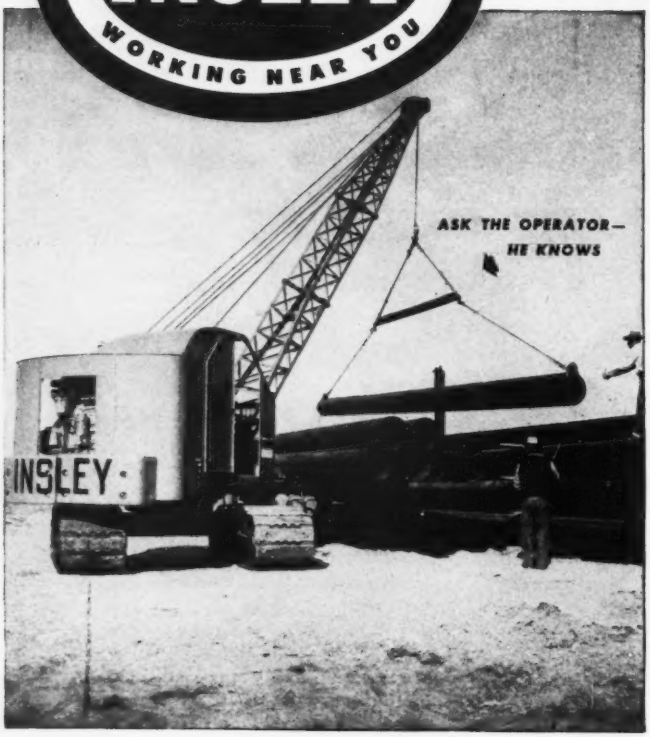
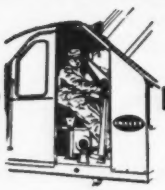


The INSLEY operator  knows..

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(Continued from p. 11)

materials in either a primary or a secondary role to complete a structural system.

Ross H. Bryan
Consulting Engineer
Bryan & Dozier
Nashville, Tenn.

ENR is too optimistic

Sir: In your note, "Metal column design is subject of research," in the Dec. 13, 1951 issue, p 66, you quote seven ways in which it is hoped that the Column Research Council projects now in progress or recently completed will ultimately improve procedures and specifications for steel column design.

While one or two of these items may be realized in the near future, it is certainly too optimistic, in general, to imply that these "may be looked for soon," as you have stated. This was certainly not the intention in the original article. Changes and improvements in design specifications necessarily occur at a rather slow pace, since they must be carefully reviewed and assessed by the committees that formulate the final specifications.

Bruce G. Johnston
Professor of Structural Engineering
University of Michigan
Ann Arbor, Mich.

Bridge in Portugal

Sir: Having recently returned from Portugal, where I had the the opportunity of seeing the bridge across the Tagus River at Vila Franca pictured on page 59 of your issue for March 6, it occurs to me that you may be interested in having pointed out the error in your statement, that the bridge will speed highway transport between Lisbon and Oporto. Actually, the spendid highway from Lisbon to Oporto lies entirely west of the Tagus River. The bridge will, however, speed transport from Lisbon to Setubal, Evora and other points east of the Tagus.

Maurice R. Scharff
Consulting Engineer
New York, N. Y.

Concrete, not asphalt

Sir: We note that in your issue of Feb. 14, p102, you have stated that the Denver-Boulder Turnpike in Colorado, between Denver and Boulder, is paved with asphalt.

This is in error as the total project is paved with eight-inch uniform thickness portland-cement concrete.

Mark U. Watrous
Chief Engineer
Department of Highways
Denver, Colo.

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HOUSING: MARKETS ARE DUE TO SHIFT

Homebuilders will have to look to new markets over the next few years. Some of the main forces behind the postwar housing boom will soon be drying up. But new demands could take up much of the slack.

• **Postwar demand**—Three main forces powered the postwar housing boom:

1) Demand built up during the war. The U. S. built a total of only 900,000 non-farm housing units in 1942 through 1945. That left a huge backlog of demand for houses—perhaps demand for as many as 2 million units. But this wartime deficit has just about been made up in the record building since the war.

2) The huge—more than 12%—increase in the number of married couples between 1940 and 1950. Higher incomes in the postwar period made many of these new couples able to buy or rent new housing.

But fewer new families will be formed from now on. By 1950, there were fully 18% less single males than in 1940. And the number of people reaching marrying age is now declining, will stay low through most of the 1950s.

3) Undoubling. In the 1940s, millions of couples and individuals stopped living with relatives and took homes of their own. By 1950, about 95% of married couples had their own household, compared to about 93% in 1940. The number of people living alone went up by 45% in ten years. But these movements are also approaching their limits.

• **Easy credit**—much of it backed by government guarantees—made these sources of demand extra effective in boosting housing activity. Six booming years of homebuilding resulted—including the three biggest years in U. S. history. And 1952 will be one of the biggest in history, too.

• **Looking ahead**—Demand from these sources won't entirely disappear—especially not as long as credit stays relatively cheap and readily available and the general level of business and income stays high. But it won't be enough to support a housing boom on the scale of 1948-52.

Does this mean a bust is coming in housing? Not necessarily. The volume of homebuilding is likely to be lower over the next few years. And it may go quite low in the middle or late fifties. But some new sources of demand for housing are likely to become more important—and help to replace waning demand from the big postwar sources.

1) Postwar houses are not large enough. The bulk have three, four or five rooms—not enough to hold a lot of growing children. But by early 1950 there were 54% more children under 5 years of age than in 1940. And millions more have been born since then, almost 4 million in 1951 alone.

As the present flock of children grows older, many postwar homes will become too small for the families that now live in them. That means more demand for larger houses—more with five rooms, some with six or seven, and with three or more bedrooms.

2) The non-white population will be seeking better housing standards. On the average, non-white families are much more poorly housed than whites. In some cities, more than 80% of non-white dwellings are classed as delapidated. But the non-white population can now pay for better housing than it could afford in the past. So it should be an increasing source of demand for housing—especially urban mass housing—in the future.

3) Slum clearance and other public housing activity will grow. There is plenty of room for work in this area. In 1950, about 8.6% of occupied dwelling units—or about 2.5 million units—were classed as delapidated. Many of these dwellings are located in large cities, where they can be replaced by public housing projects.

The volume of public housing construction has been rising ever since 1947. Starts reached 71,000 last year, may hit as many as 150,000–200,000 a year within the next few years.

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- √ High Line Speeds
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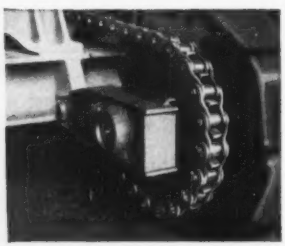

Crawler outboard bearing assembly

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EDITORIALS

Will the NAHB back warranties?

CONGRESSIONAL INVESTIGATION of the quality of current house construction has brought to public attention a number of instances of shoddy construction. As much afraid of the effect of this adverse publicity on sales as of the possibility of restrictive legislation, the National Association of Home Builders is considering a plan to have its members issue a warranty on every house they build (ENR March 6, p29). Such warranties, if fulfilled when necessary, would definitely be in the public interest.

At present, the public is somewhat protected by law against financial losses due to bad construction. Courts have ruled repeatedly that when defects are discovered, even after a contractor has received payment and the owner occupies the premises, the builder is liable. But as the congressional investigating committee has learned, legal protection is not enough to prevent shoddy workmanship.

Nor will the mere issuance of a warranty in itself guarantee quality construction. Unless the builder will voluntarily follow the best known construction practices, and will repair any defects that may inadvertently be incorporated—without the need for lengthy correspondence or recourse to legal action—a warranty is no improvement over the owner's present legal rights.

It is not quite clear at this time how far the NAHB intends to go beyond merely recommending the warranty plan to its members—particularly since there already is evidence of hedging by some builders. For example, some warranties contain a clause disclaiming responsibility for damage resulting from natural wear and tear or for storm damage or defects inherent in the materials used. Yet, it seems reasonable to require a builder to supply materials free from defects and capable of withstanding wear and tear for one year; also to construct a house that doesn't come apart in the first few storms that strike it.

The warranty plan has excellent prospects for benefitting both the public and the members of the NAHB. But if these prospects are to be realized, the plan must be made into something more than just a publicity stunt to offset the adverse publicity homebuilders are getting during the current congressional investigation. Homebuilders should issue warranties that fully protect owners, and the NAHB should stand behind the warranties.

Prestressing—Let's be accurate

TWO TERMS—pre-tensioning and post-tensioning—have been used by engineers abroad to define two types of prestressed concrete. In the early stages of technique development, these terms were very useful, but in recent years their significance has dwindled. And, since work is now under way on a U. S. specification for prestressed concrete, pre-tensioning and post-tensioning require accurate definition.

Broadly speaking, a pre-tensioned beam is a prestressed member for which the steel is stressed before the concrete is cast. A post-tension member is one for which the steel is stressed after the concrete has attained sufficient strength to receive the prestress. Originally, these terms meant that in pre-tensioned members the steel transferred the prestress to the concrete through bond, and in post-tensioned members through end anchorages.

Now the method of transfer of prestress is of great significance because it determines very important properties of a prestressed beam, such as reserve strength or safety factor, resistance to diagonal tension and type of cracking under overloads. Consequently, it is important to note that since World War II techniques have come into use calling for end anchorages on pre-tensioned members and grouting-in of the steel in post-tensioned members. The result is that pre-tensioning and post-tensioning no longer connote a method of stress transfer.

This was clearly demonstrated at the American Concrete Institute Convention in Cincinnati. One of the speakers described some tests he had made on "post-tensioned" beams. The first question asked after his talk was, "Were the wires grouted in?"

If the terms pre-tensioning and post-tensioning are used from now on, they should only be applied to methods of fabricating prestressed concrete beams and not to methods of stress transfer. For the latter, the newer terms of bonded prestress and end-anchored prestress are the ones to use. Prestressed beams may utilize either of these methods of stress transfer, or both in combination. An accurate definition of a prestressed member must reflect this fact.

Thumbs down on alternate bids

WITH RATHER PRECIPITATE EAGERNESS, both the Associated General Contractors and the American Society of Civil Engineers have declared their opposition to the idea of alternate bids, tried in a limited way recently by the Corps of Engineers. In Europe, the practice of contractors submitting bids on their own designs is commonplace, and there are many claims that both originality and economy are aided thereby. But it is apparently too alien to our practice of bidding on a single design prepared by the owner's engineer to arouse enthusiasm or support. There are good arguments in favor of our system, but for certain jobs and special situations the alternate bid method might well have an advantageous applicability. It is too bad that it didn't get a more sympathetic trial, both on the part of the Corps of Engineers and the profession.

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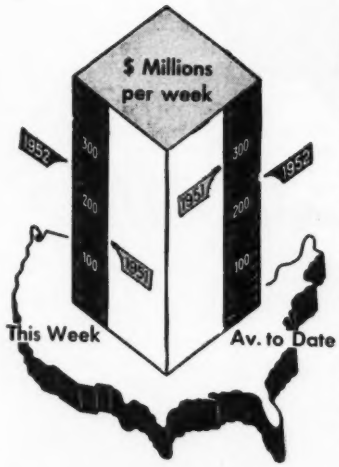
THE CONSTRUCTION WEEK

ALTERNATE FOR ALTERNATE—Attempting to get around objections to contractors bidding jobs on the basis of their own alternate designs (common in Europe, frowned on in the U. S.—see p. 19) Army engineers will try a new one on a $14-million dormitory and messhall job for Travis Air Force Base, near Fairfield, Calif. Here's the trick: The April 25 bid call is based on official plans prepared by Industrial Engineering Co., Oakland, calling for 3-story reinforced concrete beam and girder construction. But bidders may also submit tenders based on a design by Albert C. Martin & Associates, Los Angeles architects, calling for use of the lift-slab method in casting and erecting floor systems.

DEBACLE AT GRAND COULEE—Bureau of Reclamation officials at Grand Coulee Dam learned last week—the hard way—that it needn't take an atom bomb to knock out the world's largest generating facility. A workman opened the wrong valve, and seven of the 18 mammoth generators were forced off the line before the resultant flood could be checked. Loss of some 700,000 kw to the Northwest Power Pool for a seven-hour period cut off all interruptible loads to Kaiser's Mead aluminum reduction plant and all power to the Northwest Alloys magnesium plant, and Kaiser's Trentwood aluminum rolling mill. The workman opened an electrically operated 102-in ring seal valve in an outlet tube at the 1050-ft elevation on the upstream side of the dam, then panicked at the sight of the resulting flood. Water roared down the tube, went through a manhole, and raced in both directions along a ventilating gallery connecting with both power houses at the 950-ft. level. It poured down into the turbine pits, drew oil from the turbine bearings, and the shafts were running in water, three generators in the west power house and four in the east were forced out of service. Improvised barricades prevented flooding of the other 11 pits.



LIFTING THE LID—A special decontrol committee of the Office of Price Stabilization is working out a decontrol plan to submit to Congress soon. But the likelihood is that building materials won't qualify. Prices in some lines—like lumber—have weakened but not enough to meet the OPS standards. To qualify, the material must be selling substantially below ceiling price. Another criterion is the prospect of a rise—this leaves out seasonally low items. Also an item whose price can easily be checked in open-market operations will be more likely to get out from under ceilings.

Contracts by type of work

	This Week	Cumulative 12 wks 1952	1951	% chge
Waterworks	$8.9	$61.6	$50.4	+22
Sewerage	5.2	45.1	74.9	−40
Bridges	1.3	60.6	62.7	− 3
Highways	16.7	237.5	203.2	+17
Earthwork, waterways	9.0	93.5	73.3	+28
Buildings:				
Public	17.5	350.6	560.1	−37
Housg., pub.	24.4	207.9	155.2	+34
Housg., priv.	41.0	640.9	488.1	+31
Commercial	30.6	113.4	174.6	−35
Industrial	83.2	634.7	1,398.1	−55
Unclassified	12.9	310.6	288.9	+8
Total	**$250.7**	**$2,756.4**	**$3,529.5**	**−22**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost.	Mar. '52	550.60	264.67	115.42
Bldg. Cost.	Mar. '52	407.21	220.12	115.75
Volume	Feb. '52	386	157	112

IN THIS ISSUE—Construction wages go up 22½ cents an hour this year (p. 23) . . . Defense Production Administrators forge new construction policy (p. 24) . . . Highlights of activities affecting construction in Congress (p. 25) . . . Builders explore new trends in design (p. 28) . . . More steel means more highway work (p. 31) . . . Raising money for highways is serious problem (p. 30) . . . "Freedom-to-Work" law is called strike-breeder (p. 40) . . . "Playing ball" with WSB brings lighter penalties to violators (p. 42) . . . Save 40¢ to 50¢ per sq ft on bridge costs (p. 52) . . . Complete incineration of refuse is wasteful (p. 55) . . . Big building using precast concrete panel walls (p. 58) . . . Grouted-in concrete makes fast job (p. 62) . . . Mechanical tamping improves backfill (p. 68) . . . $56 million wanted to finish highway to Panama (p. 72) . . . Biggest flood could have been bigger (p. 128).

Heavy-Duty Autocars Control the Load

Views of a mighty DC-20064 Autocar-Diesel owned by Basic Refractories, Cleveland, Ohio. G.V.W. is 85,000 to 90,000 lbs. It hauls three passes of a 5-yard shovel from a quarry at Maple Grove, Ohio—on 2 and sometimes 3 shifts.

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Wage rise to hike building costs

By Joseph Gambatese
Washington Staff

Rising construction costs got another shove upward when the government decide to let construction wage costs go up 22½ cents an hour this year.

A new wage policy permitting wages of on-site mechanics and laborers to be raised 15 cents an hour and allowing contractors to contribute another 7½ cents an hour for health and welfare benefits was recommended by the Construction Industry Stabilization Commission, as reported exclusively in ENGINEERING NEWS-RECORD on March 6. It was adopted formally and announced by the Wage Stabilization Board a week later.

The higher wage ceiling is permissive, not mandatory, and will be effective throughout 1952. Contractors are cautioned that, until the higher scales are approved as area rates and the welfare payments become area practice, prior approval must be obtained from CISC before new adjustments may be made. After that, any contractor may on his own conform to the higher scale and the welfare contributions.

The higher costs should be reflected shortly, because 70% of the labor contracts in construction are negotiated in the spring. About two and a half million-site construction workers come under these rules.

Employer members on both WSB and CISC joined in raising the construction wage ceiling 15 cents because it approximated what other employees are being allowed under wage stabilization. Except for William J. Cour of the National Electrical Contractors Association, a member of CISC, industry representatives voted against the welfare benefit allowance. However, Cour was guided by the fact that WSB has allowed welfare benefits outside the wage ceiling to workers in other industries.

• **The dissent**—Approval of welfare benefits up to 7½ cents an hour was branded as a "come and get it policy" in a dissenting opinion by the two general contractor representatives on CISC—James D. Marshall, assistant managing director of the Associated General Contractors, and Everett W. Dunn of Hartley, Iowa, consulting engineer. The fourth industry member on CISC, H. R. Cole, executive secretary of the Tile Contractors' Association, also voted against the welfare policy, although he did not join in the dissenting opinion.

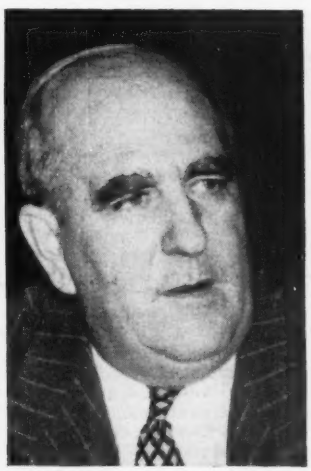
On wages, the new policy states that "as a normal rule" CISC will approve wage increases up to 15 cents an hour in addition to the old policy, adopted Aug. 31, of approving increases up to 10% of the wage paid on July 1, 1950—Korea.

In other industries WSB allows wages 10% above Jan. 15, 1950, plus the percentage increase in cost of living since January, 1951. Right now, this is 14.7%, although some workers can get more because (1) they had increases of more than 10% before the January, 1951, wage "freeze" (mine workers) or (2) they have escalator and annual productivity clauses (auto workers).

WSB justifies the 15-cent figure on these grounds:

1. The 14.7% yardstick used for other workers would entitle construction workers to 12 of the 15 cents.
2. Unlike other industries, increases in paid holidays, vacation pay, pensions and other fringes (except welfare benefits) will be charged against the 15-cent allowance.
3. Use of a flat 15-cent figure instead of a percentage will be less disruptive of craft and area differentials, will tend toward more stability and thus be less inflationary in its final impact.
4. The 15-cent figure will remain firm all during the year, even though

JAMES D. MARSHALL of the AGC dissented on welfare benefits.



H. R. COLE, of the Tile Contractors' Assn., voted against it.

EVERETT W. DUNN, consulting engineer, joined in the dissent.

Wage rise . . .

(*Continued from page 23*)

the cost of living may rise still more to give other workers additional increases under WSB's cost-of-living formula in Reg. 8.

WSB doesn't take into account the fact that construction workers were given a 3% windfall when CISC's 10% policy used July instead of January, 1950 as the base date. Union wage scales rose 3% during the first half of 1950.

• Another regulation coming—On health and welfare benefits, CISC will issue a regulation specifying the procedure for filing health and welfare plans for approval. All new plans or increases in employer contributions to existing plans must get CISC approval before put into effect, with this exception: when a plan is approved as an area practice, any contractor may conform without further approval.

Plans will "normally" be approved where the employer does not contribute more than 7½ cents an hour, which CISC found many contractors were contributing under pre-freeze plans.

This approach differs from WSB's welfare plan regulation, No. 19, which fixes no cost ceiling but limits the benefits which a worker may obtain if he does not share at least 40% of the cost. CISC feels the cost, rather than benefit, approach is better for construction because the cost of particular benefits varies around the country. It is normal industry practice to fix the amount of contractor contributions rather than to specify particular benefits, and migratory contractors can be brought into the plan more easily.

Average Hourly Earnings (Without Overtime)

(Source: Bureau of Labor Statistics)

	Building Trades	Manufacturing
January, 1950.....	$2.21	$1.38
July, 1950.....	2.27	1.41
January, 1951.....	2.36	1.49
January, 1952.....	2.46	1.56

CISC considers, too, that the 7½ cents an hour will buy construction workers less than employees in other industries may get under Reg. 19. It is estimated that construction workers put in an average of 1,600 hours a year, compared to 2,000 hours for manufacturing employees. To provide construction workers with the same benefits Reg. 19 allows manufacturing employees would cost nine cents an hour, according to a CISC source.

Welfare benefits must be limited to those covered by Reg. 19—disability, hospital and surgical expenses, in-hospital medical expenses, life insurance and accidental death, with some qualifications for retired employees—with one exception: medical costs not connected with hospitalization may be covered by the benefits.

Provision is made for starting contractor contributions before a plan goes into effect since, in this industry, it is often necessary to build up a health and welfare fund before benefits can be purchased.

While contributions to welfare plans are considered "compensation" and thus subject to wage controls, contractors may not deduct these costs as a business expense for income tax purposes until the plans are approved by the Bureau of Internal Revenue.

• Criticism—Marshall and Gray made these points in criticizing the new health and welfare policy:

• It permit benefits to retired workmen and provides coverage when unemployed despite the construction industry's peculiarity for intermittent employment.

• Medical expenses are not limited to those incurred in a hospital, as they are under Reg. 19 for other industries.

• Welfare plans have been established in only a few localities and in only the most closely organized segments of the industry.

• Every union will be forced to demand the 7½ cents for welfare funds.

• Local bargaining, essential in construction, is destroyed.

• The policy is unstabilizing and will create inter-area and inter-craft inequities as well as inequities between the large and the small labor groups resulting in subsequent wage demands.

Marshall and Dunn stressed, further, the point that the cost of welfare benefits should be charged against the wage-increase formula because construction industry wage scales have always compensated for the industry's peculiar working conditions and the lack of welfare benefits not considered practicable. Besides, in many areas welfare plans have been adopted in lieu of a wage increase.

DPA tells builders: Come and get it!

Government controls agencies this week switched over to an expansion policy for construction. From now on, the controls people will encourage—rather than frown upon—new commercial-industrial-public projects.

The change in policy was stated by Defense Production Administrator Manly Fleischmann. Behind the statement lies a sharp shift in official thinking.

Controls chiefs have become convinced that planning of new projects must be stimulated. Further, they feel that the outlook for materials gives them safe leeway to make advance allotments to a large number of these jobs.

Decreasing flow of new project applications brought the problem home to the planners. Construction people have been warning of the danger for some time.

First to feel the benefits of the liberalized policy will be the projects already on file. These jobs are expected to get early construction authorization and allotments for the third and fourth quarters. Even if your application has been denied, you do not have to reapply.

Among these projects—previously applied for but so far denied—are some 1,100 commercial-religious-institutional buildings that may soon get permits to start construction. The policy statement makes clear that projects in labor-distressed areas will continue to get preference. NPA recently gave the green light to 105 projects in six such areas, hard hit by unemployment in the building trades (ENR March 13, p. 23). Only "frivolous" construction in the amusement-entertainment category remains outside the pale.

A large number of deferred industrial projects also are expected to receive advance commitments soon. NPA has processed and assigned numbers to about 250. They will be released for construction as soon as advance allotments can be made.

Highways, schools, hospitals and other public programs will get larger amounts of materials, particularly structural steel for distribution to new projects in the third and fourth quarters, Fleischmann said.

Three factors will govern action on new industrial-commercial applications, Fleischmann explained. First, they will be considered in the order

in which they are received. Second, the projects that show engineering readiness—with plans and schedules in shape to start construction promptly—will get preference. And finally, in a choice between two projects that are equally qualified, the approval will go to the job in a labor-hardship area.

All projects are subjected to screening and phasing—for possible reduction and rescheduling of materials requirements. Jobs that take as much as 250 tons of structural steel undergo special scouting by the Construction Analysis Staff—the Steep Committee of structural experts.

Easing of structural steel is probably the biggest single factor back of the new policy. About 900,000 tons of structural shapes were allotted to construction for the second quarter. NPA has found that an equal allotment for the third quarter would take care of all going projects and all those in the agency's file that have so far been denied or deferred—plus some other new jobs. And more structural steel is likely to be available for construction in the third quarter.

Changeover to the new liberal policy came none too soon. Industry people generally agree that the shift was too long in coming. On structural steel, for example, there is a lead time of about five months from the date a project gets the go-ahead signal until first deliveries are needed.

• **Toward decontrol**—The new policy marks another step toward decontrol. Discussing that possibility, Fleischmann told newsmen that the carbon steel market should be close to normal by year's end, except for heavy plates and tubing. Decontrol of most carbon steel items might be feasible then, he intimated, with special priorities to the Defense Department and Atomic Energy Commission.

But copper will have to stay under CMP for a long time, Fleischmann declared. Modest expansion of supply in the next year or two won't begin to match the demand.

Reduction in military use of both copper and aluminum means there will be more for builders hardware and some construction materials, however. Allotments for production of such items as metal windows, screens, cabinets, fixtures and the like, probably will be increased along with other consumer durables in the third quarter. Expected level of allotments for these products is 60% of pre-Korea steel, and 40% of aluminum and copper. That's 10% more steel and 10-15% more aluminum and copper than was made available for these items in the present quarter.

Congress struggles over money bills appropriating funds for construction

Congress was busy last week revamping and shuttling several bills which vitally affect construction. Here is a summary of the highlights:

• **Controls**—Hearings by the Senate Banking and currency Committee on extending the Defense Production Act indicate that the committee is convinced that now is the time to provide for decontroling materials that are in plentiful supply.

It is willing to give the mobilizers a chance to set up a plan for decontrol of both materials and prices. But if they don't come up with some evidence of setting up decontrol apparatus by the time the bill is ready to be reported to the Senate—around April 1—then the committee will spell out a rigid formula for decontroling both materials and prices in its extension of the act.

The mobilizers have asked that decontrol be left with them, but their go-slow attitude is irritating the committee, which is under tremendous pressure from business to start decontroling both materials and prices.

Samuel W. Anderson, Deputy DPA Administrator for Aluminum, reported to the House Select Committee on Small Business, that aluminum expansion now underway will push production of virgin aluminum to 126,000 short tons per month by the last half of 1953.

• **Highways**—House Public Works Committee ended hearings on three bills on the Federal Aid Housing Act of 1952 and is about ready to act. The Senate committee, which has a bill before it identical to one of the House bills, is going to sit tight until it sees what the House committee does to the administration's bill.

The Administration is pushing a bill that would cut the federal aid to $400 million from last year's aid of $500 million. The Chavez bill in the Senate and the Dempsey bill in the House each call for $600-million federal aid and the Dondero bill calls for $700 million.

The House committee thinks the Administration bill is way too low. There is a strong feeling in Congress that money taken by the federal government from road users in form of gas and oil tax, excise and use taxes has never been returned in any measure commensurate with the amounts collected. And in an election year there's even more incentive for congressmen to be generous in handing out money to be spent in their own bailiwicks.

This is countered by administration pressure to hold down non-military expenses. There is strong sentiment in the committee to write a new bill and boost the $400 million as high as possible without running the risk of Presidential veto.

• **Independent offices**—The House Appropriations Committee last week recommended a slash of 10% in the proposed $7-billion budget for independent offices. The Atomic Energy Commission, which had asked for $1,312,000,000 was allotted $1,137,727,500. Funds for continuation of AEC construction projects already under way were approved, but some proposed new construction was deferred. Largest single appropriation recommended is $284.2 million for the Savannah River project.

Construction of public low-rent housing units under the Public Housing Administration would be severely cut. The committee slapped a ceiling of 25,000 on new starts and said that in no future year should it exceed that number without express congressional approval. Savings of $56 million will result from the cutback. Scarcity of materials justified the reduction, the committee said. President Truman asked for 75,000 starts during the next year. This represents an increase of 25,000 over the current year.

• **Water**—House Interior Committee has reported out HR 6578 (amended), which calls for research into practical means of converting sea water into fresh water. However, the committee watered the bill down by cutting out the demonstration plant called for in the Engle bill and spreading the $1-million appropriation over a five-year period. Action was not taken until last week, although the committee completed hearings last fall.

• **Power**—Gordon R. Clapp, chairman of TVA, informed a House Appropriations Subcommittee that the $62,528,000 in new construction money asked for in the 1953 fiscal budget would provide for starting work on eight new steam plants and three new hydroelectric plants. TVA also asked for $105,570,000 for continuing construction on 29 projects—7 hydroelectric plants, 17 steam plants, and 5 reservoirs and dams. Five steam plants and one hydroelectric plant will be in service by June 30th, Clapp testified.

EAST BOSTON EXPRESSWAY is rapidly moving toward completion. The photo shows work on the Neptune Road end of the $10-million project. The contractor is making the northerly connection with the section already completed. The southerly connection with Sumner Tunnel is also being rushed so that it will be finished for summer traffic.

New turnpike plans roll out in volume

The governors of Missouri, Kansas, Oklahoma, and Texas last week discussed plans for a $630-million toll road network to be provided by privately financed self-liquidating turnpike revenue bonds.

One route of the network would run from St. Louis through Kansas City, Topeka, Wichita, Oklahoma City, Dallas-Fort Worth, Houston and Galveston. The other would go from St. Louis to Joplin, Tulsa and Oklahoma City, feeding into the Tulsa-Oklahoma City toll road to open in January 1953.

Estimated cost by states are: Missouri, $245 million; Kansas, $104 million; Oklahoma, $149 million; Texas, $130 million.

The West Virginia Turnpike Commission last week approved public sale within 30 days of $96 million worth of revenue bonds for construction of an 88-mi turnpike from Princeton to Charleston.

The Commission also announced the financial arrangements will be made later for an extension to the Virginia line and to enlarge the entire road. Work on the roadway will begin this spring and completion is expected by June 1, 1954, according to Commission Chairman D. Holmes Morton.

Pennsylvania's Turnpike Commission last week announced the route of a 33-mi turnpike extension from the King of Prussia terminus to link with the New Jersey Turnpike at the Delaware River north of Bristol.

Completion of the link between the two superhighways now some 40 mi apart, will provide a high-speed toll road from New York City about 425 mi to the Ohio border. Construction will be financed by self-liquidating turnpike bonds to be sold by the commission.

• **Other activities**—Oklahoma's Turnpike Authority has set April 8 as the target date to receive bids on a final bond issue of $7 million to complete the Tulsa-Oklahoma City toll road. The original issue was for $31 million. . . . Tentative route for a 13-mi freeway through the metropolitan area of Seattle to fit into an express highway from the Canadian border to the Columbia River, has been approved by the Washington State Highway Department. It is planned as two unidirectional roadways of three lanes each, with a two lane reversible flow roadway between them. Sections of it will handle 5,500 vehicles an hour.

ENR index ready

The semi-annual index of ENGINEERING NEWS-RECORD, July-Dec., 1951, is ready for distribution. Copies have been sent automatically to those who have ordered earlier indexes in recent years. Copies will be supplied free of charge also to other subscribers who request them.

Requests should be directed to the "INDEX" ENGINEERING NEWS-RECORD, 330 West 42nd Street, New York 18, N. Y.

Key chairmen named for engineer meetings

Twelve of the nation's leading engineers were named last week to act as chairmen for special general meetings at the Centennial of Engineering in Chicago.

The convocation, scheduled from September 3 to 13, is expected to bring more than 25,000 leaders in American and foreign engineering bodies to Chicago. Already 51 American groups are planning to participate, and nine foreign societies from Great Britain, France, Japan, India, Mexico and Canada.

The special general meetings of the convocation will be in addition to the more numerous technical meetings planned by individual societies. Session chairmen and the engineering subjects to be covered are:

Structures and Construction—Waldo G. Bowman, Editor, ENGINEERING NEWS-RECORD; Transportation—Charles F. Kettering, Research Consultant, General Motors Corporation; Mineral Industries—Clyde E. Williams, Director, Battelle Memorial Institute; Chemical Industries—F. J. Curtis, Vice President, Monsanto Chemical Company; Communications—William H. Harrison, President, International Telephone & Telegraph Company; Energy—Eugene Ayres, Technical Assistant to Executive Vice-President, Gulf Research and Development Company; Food—Clarence Francis, Chairman of Board, General Foods Corporation; Tools—Kenneth M. Condit, Dean, School of Engineering, Princeton University.

200 tons of steel topple as gale blows in Kansas

Winds which reached a top velocity of 70 mph toppled 200 tons of steel framework for the five upper floors of the partly-finished $1.9-million science building on the University of Kansas campus at Lawrence, Kans. The collapse occurred on the afternoon of Wednesday, March 12. No one was injured.

Strong gale-proportioned winds snapped heavy supporting guy cables. The steel sections then crashed down. The steel fell to the ceiling of the ground floor of the center wing of the E-shaped building.

Only an hour before the steel tumbled down, twenty men had been placing concrete at the site where the crash occurred.

Ross Patterson, project superintendent for the B. A. Green Construction Co., said the project will be delayed for at least one month. The damage is covered by insurance.

Starts may hit 1 million

Government housing people have no aversion to seeing new starts this year go well above the "attainable ceiling" of 800,000 units. Privately they admit that estimates of 1 million starts are not out of line.

In fact, housing officials would feel safer if new starts did exceed 800,000. The attainable ceiling was set as the minimum new housing necessary to prevent hardship and imbalance in the supply of shelter. Anything less would cause some distress immediately and would lead quickly to inflation of housing values resulting from shortage, they said.

Forecasts of materials supply formed the basis in January for estimating the attainable ceiling at 800,000 starts. Since then the materials outlook has brightened, as the new housing order issued last week makes evident.

The order increases the top self-authorization limit on steel by 500 lb per dwelling unit, raising it to a new level of 2,300 lb. True, the top limitation on copper—for a house using a copper water system—is reduced 25 lb to a new level of 145 lb, but the order contains provisions that ease the copper restrictions, too.

• **Basis cited**—The 800,000 attainable total was based primarily on second quarter allotments of controlled materials for housing. These indicated only enough materials to start 660,000 units at the 1951 rate of materials consumption in new houses. HHFA Administrator Raymond M. Foley said then that builders would have to tape inventories and conserve materials in order to reach the attainable ceiling he mentioned.

Nobody knows how much is held in inventories, but general opinion agrees that substantial quantities of controlled materials are stockpiled around the country. The new housing order is so written as to induce, if not force, the construction of smaller units and the use of stockpiled materials in these houses.

Housing starts to date

Revised housing total for 1951	1,093,000
(November figures are revised to 74,500, including 2,300 public housing units.)	
Housing starts for January	68,000
Housing starts for Ferbuary	77,000
Total	145,000
(Estimates by the Bureau of Labor Statistics.)	

Housing starts in the first two months point to a one-million-unit year. The estimate for January was 68,000, and the total for February is 77,000.

With 145,000 units started in the two coldest months, builders are well on their way to a one-million total for 1952.

• **Last month**—Warning of the new order boosted February starts. The total for the first two months runs ahead of the historical pattern for a one-million-unit year. According to the historical average for a year of that volume, first-quarter starts wouldn't exceed 200,000. Housing officials recognize that starts will run high in the first quarter of this year; they won't, however, be a reliable indicator of the twelve-month total.

The National Association of Home Builders has made no recent survey of members' plans for starting new houses in 1952. Its latest sampling—made last fall and now outdated—indicated more than a million starts planned for the year.

• **Money factor**—Materials weren't the only factor in determining the government's attainable ceiling for 1952. Equally important was the prospective supply of mortgage money.

FRB Chairman William McC. Martin told the Senate Banking Committee that the board thinks mortgage money would get tight if the demand should be swelled by many more than 800,000 new units. That thinking makes allowance for about $10 billion of deficit financing by the federal government this year, predicated on the President's budget.

Should that deficit be reduced, more money would be available for other purposes, including mortgages. But, if Congress goes along with the military and doesn't cut expenditures much, funds will be adequate to finance only a moderate volume of housing production.

You can get all kinds of estimates on the federal deficit and the mortgage market. What the opinions boil down to is that nobody is sure but that a lot of mortgage people think there will be enough money to finance more than 800,000 and up to a million new starts.

Interest rates on VA and FHA loans are something else. Government agencies have no intention of raising them. They are satisfied that the present rates are competitive and will continue to maintain a good volume of loans.

NEWS BRIEFS

• **Soft drinks go industrial**—Last week NPA announced that soft drink bottling plants have been reclassified as "industrial facilities" under NPA construction regulations. Previously classified as commercial, the self-authorization limit for such a plant was five tons of carbon steel and 200 lb of copper. Under the new classification, the self-authorization limit is now twenty-five tons of carbon steel and alloy steel, including all types of structural shapes, 2,000 lb. of copper and copper-base alloys, and 1,000 lb. of aluminum.

• **Contest**—The National Association of Home Builders last week announced a nationwide merit award program for home builder-architect teams. Design and construction techniques will be judged. Deadline set for entries is April 15.

• **Building plans**—American Community Builders, Inc., developers of Chicago's Park Forest suburb, has announced plans to build more than 1,000 three- and four-bedroom row house dwellings in the community. They will be six-family buildings, with living rooms located in the rear, facing a landscaped court. Off-street parking will be provided for each of the units.

• **Industrial construction** — Ground breaking was scheduled for this week at Clinton, Iowa, in construction of a $66-million steel mill for North American Steel Co. . . . Turner Construction Co. awarded a contract by White Pine Copper Co. to build the $57-million industrial and community project at White Pine, Mich.

• **In the offing**—Cauldwell-Wingate Co. is set to build a $10-million 50-story office building on the southeast corner of Park Ave., and 58th St. in New York City. . . . Marshall Field & Co. has announced it plans to break ground before the end of the year on a $25-million shopping center in Skokie, northwest of Chicago, if government approval to initiate the project is obtained by the firm.

• **Industrial construction**—The Bowater Southern Paper Corp. has instructed its consulting engineers (J. Sirrine Co.) to accept proposals for buildings and equipment for a $50-million paper mill to be constructed in East Tennessee near Charleston. A certificate of necessity for the plant was granted recently by NPA.

Builders apply new trends in design . . .

1. A-BOMB PROOF concrete structure to house the Armed Forces Institute of Pathology at Walter Reed Medical Center, Wash., D. C.

1. Atom bomb proof

With a low bid of less than $5 million, the Cramer-Vollmerhauser Co., Inc., Washington, D. C., beat out nine other contractors to get the job of building an eight-story reinforced concrete structure designed to resist A-bomb blast. The building will house the Armed Forces Institute of Pathology at the Army's Walter Reed Medical Center in the District of Columbia. Bidding was close and spirited with seven of them within 6% of the low figure.

Including an allowance of $44,000 for an estimated 2,000 cu yd of rock excavation, the low bid at $4,968,700 averages out to a little more than $18 per sq ft and about $1.95 per cu ft for the completely equipped laboratory building, exclusive of elevators.

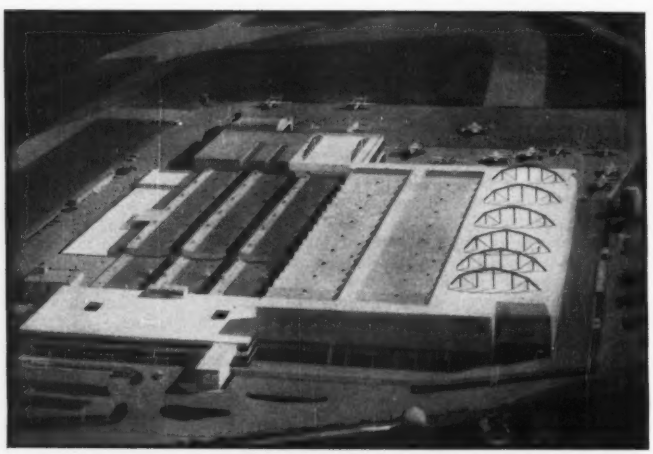
Located north of the center of Washington, the main portion of the building is designed to withstand the blast of an A-bomb exploded ½ mile from it. The protective construction branch of the Office of the Chief of Engineers specified design for 13.6 psi positive pressure and 6.8 psi negative pressure on the north, east and west sides and roof.

For the south side, the pressures were doubled to 27.2 psi positive and 13.6 psi negative. Marshall and Gongwer, structural engineers, Washington, D. C., applied these criteria in developing the structural design for the architects, Faulkner, Kingsbury and Stenhouse, of the same city.

• **Sloping site**—By putting a deep basement and sub-basement below ground, the building design furnishes almost complete protection for large storage spaces.

Above the ground floor the main portion of building has five stories roughly 206 by 102 to 110 ft in plan —a shape designed with depth in two directions to resist blast.

This part of the building has unbroken windowless walls of reinforced concrete for the entire height of eight stories, with blast doors of guillotine or side-hinged vault type at the few openings. Minor office wings with windows and several other expendable features—not designed for blast resistance—are built on to the protected core of the structure.



2. HEAT SAVING and steel saving technique used on enlarged Fairchild Aircraft plant used at Hagerstown, Md., will look like this when complete. Additional facilities, including new bay hangar, and warehouse will increase space 1 million sq ft.

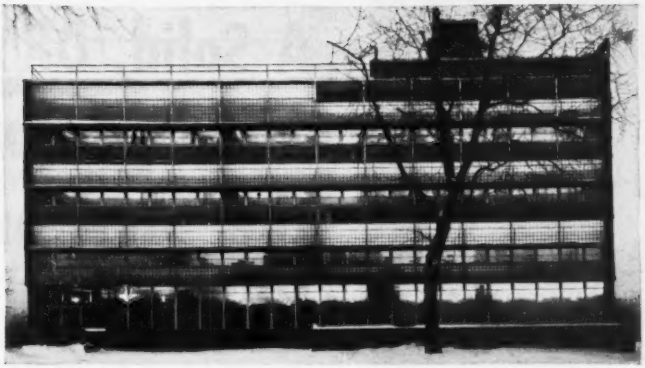
2. Less space to heat

Fairchild Aircraft will use some unique construction techniques in enlarging the Hagerstown, Md., plant during the building program now under way.

One of the main construction features is the use of all-welded steel construction and bowstring roof trusses with chords extending above roof level. The method will permit a lower roof and less space to heat, requiring no new boilers. It will also permit the entire 200-ft width of new production space to be free of vertical columns. The all-welded bowstring truss construction provides a saving of about 15% of the steel needed, and provide economy of maintenance.

A north extension to the present hanger, 85 ft wide by 150 ft long, will also use the bowstring truss exposed type chord construction.

The over-all expansion program slated for completion on Nov. 1, 1952, will provide more production area for the manufacture of the Flying



3. CANTILEVERED construction is the feature of the new Layton School of Art building at Milwaukee, Wis.

4. WIDE-SPACED BAYS give the Westinghouse plant convertibility.

Boxcar planes for military transport.

Grading operations for the project are about 85% finished. On completion of the grading, Calabro Construction Co., of Elizabeth, N. J., will begin excavating for the building foundations.

Structural steel work for the entire project will begin at the end of March. Steel for the all-welded east and north additions is being furnished by the Lehigh Structural Steel Co., Allentown, Pa.

The new production bay will be 200 ft by 675 ft and adjacent to the present assembly building.

Plans for the expansion program were prepared by Fordyce and Hamby, New York architects.

3. Cantilever used

The new Layton School of Art building at Milwaukee, Wis., is of cantilever construction. The building is 70 by 100 ft in plan. It has reinforced concrete framing, with no exterior wall columns. Two rows of columns along the long axis of the building, 22 ft apart, support cantilevered spans of 24 ft.

The long east and west elevations have glass block curtain wall supported by exposed steel mullions. The north and south elevation are made of concrete.

Jack Waldheim designed the structure and Siesel Construction Co. was the contractor. Costs are estimated at $500,000.

4. Easy to change over

Designed for quick changeover from peace-time to defense needs, this Austin Co.-designed and built structure met its first test almost as soon as it was built.

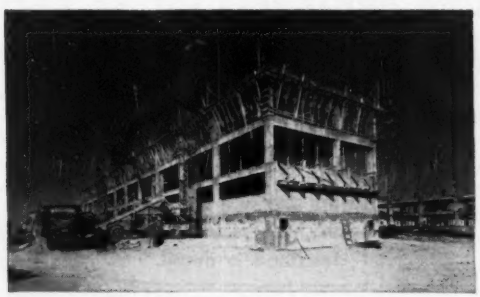
Westinghouse Electric Corp. at Metuchen, N. J., intended to use the building for the manufacture of TV receivers, but instead had to shift to production of special electronic equipment for the armed forces.

Farsighted features used in the building include:

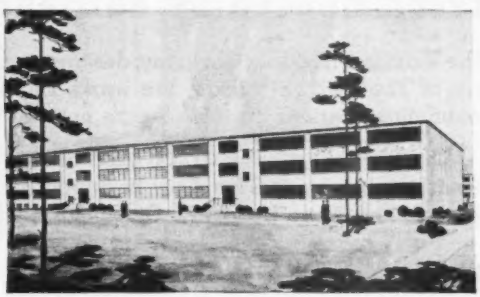
- Wide bay spacing, with only ten interior columns per acre of floor space, made the layout easy for production of equipment that was not anticipated.
- Provision for future expansion by use of cinder block instead of brick in the rear wall.
- Electrical distribution system designed so that as long as current can be supplied to the plant, it can be used in the manufacturing area to keep production going.
- In the event that precise control of temperature and humidity is required, refrigeration equipment can be installed in the existing ventilating units.
- Boilers have been set up to burn oil, but can be quickly converted to coal. Boiler auxiliaries have been provided in duplicate.

5. New Army barracks

The only resemblance between these modern concrete structures and the old wooden mobilization barracks of World War II is the name barracks. These reinforced concrete frame buildings are designed to house 225 enlisted men. Eight of the permanent type barracks are under construction at Fort Hood, Texas, under supervision of the Fort Worth District, Corps of Engineers. Louis and Henry, architects of Louisville, Ky., designed the structures.



5. FRAMEWORK GOES UP on a typical new barracks building at Fort Hood, Texas.



ARTIST'S SKETCH of one of the 225-man permanent type barracks as it will look when completed.

A Solid, DRY foundation for the Swifton Village— Cincinnati, Ohio

Al Loreti applying two coats of Thoroseal to foundation of one of 1200 units. Economy plus durability has made The Thoro System materials a "must" on the list of contractors who know the importance of masonry protection.

An architect's conception of a unit at Swifton Village where the $25,000,000 project will house 4,500 people.

THOROSEALING a foundation has been recommended by outstanding engineers for 39 years

The Jonathan Woodner Company, designers and builders of The Swifton Village, are using Thoroseal for foundation coatings on their 7-acre housing project.

The Thoro System materials, used on this project, furnished by the Oakley Coal & Supply Company, through The Nurre Company, Cincinnati, Ohio.

WATERPLUG Stops leaks
THOROSEAL Seals surface
QUICKSEAL Beautiful finish

Get our 20-page brochure pictorially described in detail.

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State highway departments anticipate easing of steel

State highway departments anticipated easing of steel restrictions when they draw up their 1952 budgets. Thus they are all set to take advantage of the easing of steel restrictions announced March 6 and any further lifting of restrictions that may come along later in the year.

This much brighter prospect for highway construction this year is revealed by a survey of the plans of state highway departments just compiled by Engineering News-Record.

Despite the year-end predictions of continuing steel shortages and other difficulties incident to the defense program, 29 of the states budgeted more highway work for this year than was put under contract last year. In dollar volume of new work the total for the 46 states reporting is $1,726 million against $1,236 million in 1951.

• **New York's Thruway**—Most spec-

(*Continued on next page*)

HIGHWAY BUDGETS FOR 1952 COMPARED WITH 1951 EXPENDITURES

1952 Budgets	New construction contracts—millions $			Maintenance—millions $ By own forces		By contract		Total
Total for	1951	1952	% chg	1952	% chg	1952	% chg	1952
46 states & DC...	$1,285.6	$1,726.4	+37	$409.0	+5.5	$41.8(25)	−5	$479.8
State								
Maine	$10.7	$15.4	+44	$6.5	0	0		6.5
New Hampshire	4.4	7.0	+59	4.0	0	0		4.0
Vermont	2.2	4.3	+94	4.5	+ 1.7	0		4.5
Massachusetts	48.0	90.0	+88	13.5	0	$1.4	0	14.9
Rhode Island	2.6	7.0	+169	2.6	+16.1	0		2.6
Connecticut	11.9	11.7	− 2	7.2	− 2.4	0.4	+208.0	7.6
New Eng. (all 6)	$79.8	$135.4	+70	$38.3	+ 1.0	$1.8(2)	+13(2)	40.1
New York	69.0	305.0	+34.2	29.6	8.4	0	....	29.6
New Jersey	28.0	34.0	+21	8.5	+11.8	0.08	16.7	8.6
Pennsylvania	101.3	110.0	+97	32.0	0	0	....	32.0
Maryland[a]	18.9	25.0	+32	6.0	+24.3	0.5	+13.4	6.5
D. C.	2.7	4.6	+69	1.4	+ 8.0	0.7	+28.0	2.1
Delaware	4.0	7.0	+76	2.4	+ 0.6	0.5	+ 5.0	2.9
Mid Atl. (all 6)	$223.9	$485.6	+117	$79.9	+ 5.8	$1.8(4)	+18.1(4)	81.7
Virginia	24.0	24.0	0.	18.0	+ 5.9	3.2	0	21.2
West Virginia	27.9	27.9[a]	0.	(14.0)	n.a.	0	....	14.0
North Carolina	42.2	40.0	− 5	28.0	0	0	....	28.0
South Carolina	20.0	19.0	− 5	8.7	+14.4	1.0	0	9.7
Georgia	31.2	31.0	− 1	8.0	+12.0	0	....	8.0
Florida	67.5	98.4	+46	8.8	+11.0	n.a.	....	8.8
Alabama	21.0	25.0	+19	6.0	0	0	....	6.0
Mississippi	17.1[a]	20.0	+17	4.6	+ 5.9	0	....	4.6
Louisiana	32.1	30.0	− 7	14.1	+ 2.1	0	....	14.1
Kentucky	25.5	28.5	+12	12.5	....	2.5	....	15.0
Tennessee	....	....	....	....	....	....	....	....
South (10 of 11)	$308.5	$343.8	+11	$96.2(8)	+4.8	$4.2(2)	0 (2)	130.4(10)
Ohio	36.1	50.0	+38	20.0	0	4.0	−56.0	24.0
Indiana	27.5	27.0	− 2	9.4	0	0.1	+ 6.7	9.5
Illinois	43.0	95.0	+121	15.0	+ 1.2	2.5	+20.7	17.5
Wisconsin	29.3	50.0	+71	(Maintenance handled through counties)				
Michigan	41.5	48.0	+ 8	3.6[f]	+10.0	13.9	+19.0	17.5
Mid West (all 5)	$177.4	$267.0	+51	$48.0(4)	+ 1.0(4)	$20.5(4)	−10.0(4)	68.5(4)
Minnesota	30.0	31.5	+ 5	12.1	+ 3.4	2.2	15.8	14.3
Iowa	51.4	43.5	−15	8.0	0	2.0	0	8.0
Missouri	33.8	34.0	+ 1	14.0	+ 3.0	0	−100	14.0
Arkansas	(14.9)	n.a.	....	n.a.	....	0	....	n.a.
North Dakota	11.6	11.5	− 1	4.2	+ 7.6	0	....	4.2
South Dakota	13.9	12.0	−13	5.0	+28.7	0.4	−50.0	5.4
Nebraska	12.9	9.3	−28	6.2	+ 8.8	1.3	0	7.5
Kansas	24.5	27.0[a]	+10	5.5	+ 3.9	2.3	+20.9	7.8
Oklahoma	17.7	36.0	+104	9.0	+12.0	0.4	+14.0	9.4
Texas	78.3	80.0	+ 2	20.7	+16.0	1.2	+71.0	29.9
Montana	12.3	12.0	− 2	5.4	− 1.0	0	−10.0	5.0
Wyoming	9.9	9.9	0.0	2.5	+ 0	0	....	2.5
Colorado	15.6	21.2	+36	3.1	+ 8.4	....	....	3.1
New Mexico	11.7	12.0	+ 3	3.8	+44.0	1.2	− 5.4	6.0
W. of Miss. (13 of 14)	$323.6	$339.9	+ 5	$105.5	+ 9.3	$11.6(9)	+ 5.5(9)	117.1
Idaho	7.8	9.0	+16	3.5	+13.0	0.1	0	3.6
Utah	8.4	10.2[a]	+22	2.7[f]	+ 4.2	0.7	....	3.4
Arizona	9.4	26.0	+178	2.6	+10.2	0.3	+ 3.4	2.9
Nevada	3.7	4.5	+22	1.9	+24.6	0	....	1.9
Washington	22.4	21.0	− 6	7.4	− 3.4	0.8	−34.0	8.2
Oregon	32.0	30.0	− 6	n.a.	n.a.	n.a.	n.a.	n.a.
California	88.7[f]	90.0[f]	+ 1	23.0	+12.2	n.a.	n.a.	23.0
Far West (all 7)	$172.4	$190.7	+11	$41.1(6)	+ 6.2(6)	$1.9(4)	+12.0(4)	43.0(6)

• [a] Chesapeake Bay bridge not incl. • [b] Increase due to flood reconstruction. • [c] less than $0.05. • [f] fiscal year. • n.a. not available. • [t] town and not incl. • [f] State law forbids awarding of contracts in an election year during last 6 mo. of office of a highway commission. • [s] incl. $3.4 million state betterment program partly by state forces. • [t] incl. $180 mil. for Thruway.

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Construction Business . . .

tacular increase is scheduled by New York State where an expenditure of $180 million on the New York State Thruway is planned in addition to $125 million in the state's regular highway work. This latter figure alone represents an increase of $56 million over last year.

Incidentally, the figure of $28 million for New Jersey's expenditures in 1951, given in the accompanying table, do not include money spent last year on the New Jersey Turnpike, which was built by a separate authority. Those expenditures amounted to about $160 million.

Other states planning to spend more than twice last year's figures are Rhode Island, Illinois (with $95 million budgeted), Oklahoma and Arizona. Massachusetts plans a large dollar volume increase, $90 million as against $48 million.

• **Effect of the steel shortage**—The steel scarcity checked the rate at which work was put under contract during 1951 in many states. Thus it had the effect of delaying work rather than stopping it entirely.

Planning for this year's work takes that fact into consideration. Several state highway departments report that they are scheduling their work so that large quantities of steel will not be required until the third and fourth quarters, when the steel situation is expected to be easier. Present indications are that the steel situation will improve materially before that time, hence the highway departments probably will be able to capitalize on this foresighted planning.

• **Projects needing little steel**—In drawing up the 1952 program several states report that they have given preference to highway construction projects requiring relatively little steel. Maine put off two large bridge projects, totaling to $9,500,000 until more steel is available. Alabama also reports putting off some large bridge projects.

Changes in design standards also have been an important factor in stepping up the dollar volume of budgeted work without a corresponding rise in steel requirements. North Dakota is substituting reinforced concrete slabs for steel girders in many new bridges. This has cut the state's use of steel from 0.1 ton per $1,000 of highway construction to one-third that amount.

• **Maintenance cost rise**—As was to be expected, budgeted maintenance expenditures for 1952 show a marked

(*Continued on page 34*)

RELATION OF STEEL REQUIREMENTS TO EXPENDITURES FOR HIGHWAY CONSTRUCTION

STATES	Tons of steel needed per $1,000 of highway construction	
	Structural	Reinf.
NEW ENGLAND		
Maine		
New Hampshire	0.126	0.047
Vermont	2.0	0.5
Massachusetts	0.46	0.23
Rhode Island	0.155	0.175
Connecticut		
MIDDLE ATLANTIC		
New York	0.30	0.30
New Jersey	0.259	0.253
Pennsylvania	0.50	0.50
Maryland	0.384	0.2
D. C.	1.98	0.174
Delaware		
SOUTH		
Virginia	0.10	0.15
West Virginia	0.09	0.12
North Carolina	0.18	0.17
South Carolina	0.20	0.30
Georgia	0.40	0.20
Florida		
Alabama	0.25	0.40
Mississippi	0.25	0.33
Louisiana	0.10	0.30
Kentucky	0.30	0.19
Tennessee		
MIDDLE WEST		
Ohio	0.50	0.45
Indiana	0.30	0.70
Illinois	0.128	0.228
Wisconsin	0.077	0.043
Michigan		
WEST OF MISS.		
Minnesota	0.35	0.36
Iowa	0.27	
Missouri	0.37	0.075
Arkansas	0.085	0.109
North Dakota	0.10	0.26
South Dakota	0.047	0.064
Nebraska	0.36	0.248
Kansas	0.128	0.164
Oklahoma	0.225	0.182
Texas	0.30	0.40
Montana	0.083	0.031
Wyoming	0.09	0.07
Colorado	0.10	0.05
New Mexico	0.20	0.125
FAR WEST		
Idaho	0.48	0.35
Utah	0.027	0.145
Arizona	0.07	0.15
Nevada	0.02	0.12
Washington		
Oregon	0.03	0.20
California	0.3	0.4

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Construction Business . . .

increase in most states. Maintenance costs have been rising steadily due, in large measure, to inability of the departments to keep their construction up to a rate that would offset losses due to obsolescence.

• **Low steel requirements**—One of the questions put to the state highway departments by ENR was the amount of steel required per $1,000 expenditure for their budgeted work. The replies, quite generally, show that the tonnage required is low. Most states reported that they required less than half a ton of structural steel per $1,000 expenditure; nearly half require less than a quarter of a ton. Three states—Utah, Nevada and Oregon—reported requiring 0.03 tons or less. At the other extreme were Vermont and the District of Columbia with requirements of 2.0 and 1.98 tons.

Construction firm gets "small business" loan

The Montana Engineering and Construction Co., of Helena, Montana, last week became the first construction company to receive a government small-business loan under the Defense Production Act.

A $24,000 loan was granted to the company by the Reconstruction Finance Corp., upon the recommendation of the Small Defense Plants Administration which is responsible for screening of the applications.

Last week's loan was granted under joint procedures developed by SDPA and the RFC.

• **Procedure explained**—The small business man files his application at the RFC field office, where it is processed and sent to the RFC national office. It is then forwarded to SDPA for examination and recommended action.

Up to March 7, SDPA had received 277 applications from small business firms. Aggregate dollar volume of these applications was $129.5 million the agency reported.

A pamphlet, "Government Loans to Small Defense Plants", explaining the policy and giving complete details of the procedures in applying for a loan, has been compiled by SDPA. The pamphlet is being distributed through all banks that have Federal Deposit Insurance, and all RFC field offices. Copies are available also at the national office of SDPA, 1337 E Street, N.W., Washington, 25, D. C.

Contract award opposed; charge bid was too low

An attempt by the Durham, North Carolina, Building Trades Council to have low bids on a public housing project in Durham thrown out on the grounds that they were too low, has been set aside by the federal Public Housing Administration.

After the Durham Housing Authority opened and approved low bids totaling $1,620,265 on a 240-family public housing project, the labor organization protested to the Richmond, Virginia, regional office of the PHA and then took the matter to Washington.

The Building Trades Council said it was protesting on the grounds that the countractors could not meet the low bids without sacrificing quality or failing to pay minimum wages.

At the request of the Washington PHA, the Richmond regional office sent a representative to Durham to investigate. He said his only concern was whether or not the low bidders were reputable firms, and after a two-day stay in the area, he returned to Richmond, and the Durham Housing Authority was instructed to award the contracts.

Low bidder on the general contract was Coble Construction Co., of Greensboro, North Carolina, with a bid of $1,448,000. Other low bidders were: W. M. Hunt Plumbing and Heating Co., of Durham, plumbing, $126,426; and Salem Electric Co., of Winston-Salem, North Carolina, electrical work, $45,480.

Lumber price ceilings set

The Office of Price Stabilization this week announced dollars and cents ceiling prices on West Coast fir and hemlock lumber.

OPS said the tailored regulations sets ceiling prices at about the average price level that prevailed under the January, 1951, freeze.

Fir and hemlock lumber produced in and west of the Cascade Mountains in Washington, Oregon and California, is covered under the new regulation.

OPS will issue dollar ceilings later on Sitka spruce, Western red cedar, Ponderosa pine, and redwood, produced in the same region.

Business briefs . . .

• **Cost index up**—The monthly construction cost index of the American Appraisal Co. rose three points to a January reading of 542.

• **Construction employment**—The Bureau of Labor Statistics reported that contract construction employment in January totaled 2,319,000.

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States ask: How to pay for new roads?

Two reports urging the state of Connecticut to raise its gasoline tax to finance needed highway improvements called further attention last week to an increasingly serious problem for highway bureaus: Finding the money to pay for improvements.

One report urged a one-cent raise in the present four-cent tax, the other called for a two-cent rise. In either case, the added revenues would go toward both new construction and maintenance and repair of existing highways.

But both proposals—and the historical fact that such propositions have been considered in almost every recent Connecticut legislative session and turned down—point to the conclusion many highway officials have already reached:

The public, demanding more and more service in its highway systems, has not accepted the fact that it must pay more for such service.

• **Facts**—The point is nothing new to the highway fraternity, and its growing seriousness has brought some serious action, as the drive by the American Association of State Highway Officials for $810 million a year in federal aid (ENR March 6, p. 35) in new appropriations measures; and the growing dependence on bond issues and revenue-producing devices such as toll roads.

What complicates the matter is a seeming paradox: There is no lack of investment capital to buy state or other governmental bonds (ENR March 13, p. 95) since their tax-exempt provisions are attractive.

But the fact that money is easily available for borrowing doesn't solve the problem of how to repay the money, once borrowed.

• **Must have more**—How to find more money for highways took up a lot of the time of delegates to the recent meeting of the North Atlantic States highway officials at Atlantic City, N. J.

Most of them admitted willingly that they were dubious about further bond issues—although the toll highways in the area (financed by bond issues) have been uniformly successful to date. There is a strong body of opinion that there isn't sufficient economic justification for many more toll routes.

The more obvious answer—but the one hardest to take politically—is more highway taxes. Many states, with gasoline taxes already at five cents a gallon or more, hesitate to go further. Some others are moving to up these taxes now.

It is an attractive move. Massachusetts—which had a three-cent tax—recently upped the figure to 4.3 cents, and expects to reap between $11 and $12 million yearly thereby. (The money will be used to pay off bonds on current express road work across the state to connect Connecticut and New Hampshire superhighways.)

• **Some ideas**—Bertram D. Tallamy, New York's Commissioner of Public Works and President of AASHO, had a few other pointers for highway officials:

First and most important, he said, is public education to the fact that new roads and good roads cost money. "It doesn't do much good for us to tell that to each other," he commented. "We have to convince the users, and through them the legislatures.

Another point, he said, might be to keep a close watch on the state's financial condition. "When a bond issue for, say, hospitals, is nearly paid off—that's the time to get the legislators to transfer the payments over to the highway department."

Additionally, there is the pushing of constitutional amendments against diversion of highway funds. "But don't count too heavily on that," said the AASHO chief. "Somebody will still have to pay for the state highway patrol and other matters. It only means more taxes somewhere else."

Contractors, bond men fight naming sureties

U. S. contractors—supported by architects—and casualty and surety agents have joined in a fight against compulsory naming of surety bond agencies by owners.

The Associated General Contractors, the Association of Casualty and Surety Companies, and the American Institute of Architects have recently passed resolutions opposing as "undesirable practice" a growing trend whereby the owner reserves the right to designate from whom the contractor should purchase performance bonds and insurance on a job.

The practice, said the surety agents, has been growing among public agen-

cies, with the implication that such a reservation is being made to favor local bonding houses.

Highway money delayed

Rhode Island won't borrow any of its authorized $12 million in bonds authorized for 1952 highway construction, Gov. Dennis J. Roberts told the legislature in his budget message. Voters approved the bonds in 1950 as part of a seven-year $40-million program.

Instead $4.9 million in federal and already available state funds will be spent engineering future projects and piecemeal construction. Roberts blames the steel shortage for the cutback.

Nevertheless Public Works Director Phillip Mancini was to call for bids on a $4.6 million widening to four lanes of Route 3, the Providence-New London highway to the Connecticut line.

Finance briefs . . .

• **Plan sewer bond issue**—Rhode Island's Blackstone Valley Sewer Authority plans a new $7.5 million revenue bond issue (the third of that size) to extend sewer construction in the authority's anti pollution campaign. The bond issue must be approved by voters of the state.

• **Memphis bonds**—The Memphis, Tenn., Board of Education, and the city itself will issue bonds of more than $4.5 million early in April, to finance street and sewer work, and school construction.

• **FNMA status**—The Federal National Mortgage Association (Fannie Mae) had, as of February, $120 million remaining in its "free fund" for over the counter purchase of non-defense FHA and VA loans.

• **Comments**—Sumner Slichter, of the Brookings Institution and the Committee for Economic Development, thinks there'll be no letdown in construction work—the demand for new improvements is too great. In an interview, however, he said he is "dead set against" releasing more materials now for commercial instead of productive construction. Commercial work, he added aggravates the danger of inflation, because it does not increase the output of consumer goods.

• **Administrative cost low**—Administrative costs of the Pennsylvania General State Authority (which finances construction through revenue bonds) has averaged only 3.61% of expenditures since 1949, according to Oscar N. Lindahl, executive director.

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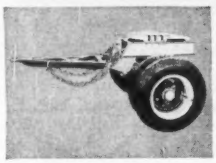

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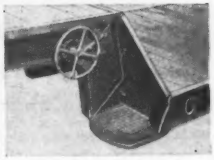

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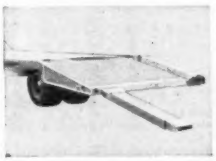

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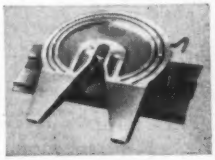

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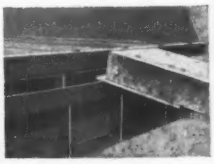

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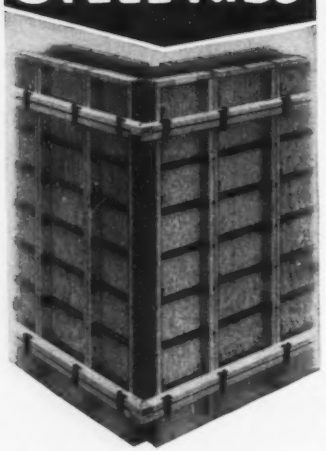

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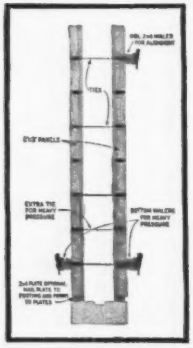

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UNIT PRICES

Sewerage system, Calif.

Its new 2mgd activated sludge treatment plant and sanitary sewer lines will cost El Cajon, in San Diego County, Calif., $524,000 instead of the $600,000 originally estimated. Lump sum bids on the plant taken Feb. 11, 1952 brought in a low of $360,975 and contract was awarded to A. H. Famularo, Santa Ana, Calif. The city purchased for $78,487 vitrified clay pipe ranging from 8" to 33" and the contractor for the sanitary sewers will install it and complete other operations for the unit prices shown herewith. A. H. Famularo was also low bidder on the sewers. The cost of the system splits up this way: pipe for sewers 15%, constructing sewers and furnishing other materials, tools and labor as needed, 15%, constructing treatment plant and furnishing materials, tools and equipment, 70%. Currie Engineering Co., San Bernardino, Calif., is the consulting engineer.

Contract for drilling a well was let to Studebaker Drilling Co., El Cajon for $5,688. Completion time is 120 calendar days for the sewers, 180 for the plant. Work started Mar. 1.

Wage rates in the San Diego area are: carpenters, $2.35; structural iron workers, $2.46; reinforcing iron workers, $2.38 and laborers, $1.75.

Bidders on installing the pipe and completing the sewers include:

1C A H. Famularo, Santa Ana, Calif.	$78,391 35
2 Drainage Constr. Co., Calif.	81,741 15

Bids: 2-11-52 Items	Unit	Quantity	Unit prices 1 C	2
Install VC pipe 8"	lf	865	$2.35	$3.50
10"	lf	1,837	2.40	3.55
12"	lf	896	2.70	4.11
15"	lf	1,823	3.85	2.90
18"	lf	3,467	3.45	3.00
21"	lf	4,207	3.50	3.20
24"	lf	1,245	3.60	3.40
33"	lf	3,301	4.00	3.60
F&p reinforced conc pipe	lf	472	7.45	8.00
manholes	ea	56	175.00	225.00
conc casement with steel	cy	43	26.00	30.00
diversion manhole	ea	1	165.00	700.00
rd grading & 20' D. G. surfacing	lf	2,438	2.00	3.00
galv corr arch culvert 11" x 18"	lf	84	5.00	5.00

Bulk storage facilities, La.

The low of eight bids submitted to the Little Arkansas Army Corps of Engineers Dec. 6, 1951 to build bulk storage facilities at Alexandria Municipal Airport is $32,905.

The engineer estimate was $45,767 for completion in 210 calendar days.

Since Army Engineers could not obtain a CMP allotment for copper wire, contractors were advised to find substitutes; all other scarce items such as the 5000-gal bulk storage tank, reinforcing steel, etc. were to be furnished by the Government. Minimum wage rates for skilled labor ranged from $1.05-3.00 per hour and from $0.85-2.00 per hour for unskilled labor. Bidders include:

1 Barnet Brezner, Alexandria, La.	$32,905
2 Schroeter Plumbing Co., Shreveport, La.	37,132
3 Walco Engr. & Const. Co., Tulsa, Okla.	203,190

Bids: 12-6-51 Items	Unit	Quantity	Unit prices 1 C	2
Base bid (Lot I)				
Earth dike	cy	740	$3.00	$1.30
Pl bulk storage tank	ls	1	11,260	11,123
Trenching, 0-3 ft	lf	105	1.00	0.54
Pipe, 6"	lf	107	3.50	5.46
Valve box	ls	1	762	935.85
Pipe sleeves	ls	1	685	501.70
Lower existing pipe	ls	1	749	986.50
Additive "A" (lot II)				
Gravel road	sy	850	1.55	3.53
walk	sy	137	1.00	3.53
Trenching, 0-3 ft	lf	640	1.00	0.54
Pipe, 6"	lf	640	3.50	4.97
Unloading coupling	ea	10	140.00	133.90
Hose rack	ea	5	72.00	154.00
Strainer pit	ea	2	508.00	746.00
Pump house	ls	1	5,288	6,330
Bonding & insulating	ls	1	615	674.72
Unloading hose	ea	10	147.00	195.75
Exterior elec work	ls	1	2,000	2,171
Fertilizer, nitrogen	lb	40	0.25	0.09
Seed	lb	10	3.00	1.00
Mulch	t	1½	150.00	50.00

Dam foundation, Kansas

Sixteen bidders went after the Kirwin Dam foundation contract let Jan. 31, 1952 by the Bu. of Reclamation at Kirwin, Kans. Even so the low bid at $1,226,246 was 9% above the engineer's estimate. Bidders include:

1C Cook Constr. Co., Jackson, Miss.	$1,226,246
2 Utah Constr. Co., San Francisco, Cal.	1,361,750
16 Amis Constr. Co., Oklahoma City & San Ore Constr Co., McPherson, Kans.	2,063,050

Bids opened: 1-31-52 Item	Unit	Quantity	Unit prices 1 C	2
Care of river, unwatr.	ls	1	$50,000	$418,800
Exc, strp borrow area 1	cy	75,000	$0.30	$0.36
fdn dam 1st 500M	cy	500,000	1.00	0.50
over 500M	cy	500,000	0.50	0.29
brw area 1, & transp to dam embank, 1st 538M	cy	538,000	0.35	0.32
over 538M	cy	538,000	0.25	0.18
Ea fill, dam emb, zn 1				
1st 616M	cy	616,000	0.06	0.25
over 616M	cy	616,000	0.06	0.14
S&gr fill, dam emb, zn2	cy	70,400	0.06	0.10
Dumpd fill, dam emb, zn3	cy	93,400	0.03	0.05

Spillway repairs, Idaho

Rehabilitation of the spillway for Black Canyon Dam, Boise Project, Idaho was let by the Bu. of Reclamation on a negotiated contract based on three bids received Dec. 20, 1951. These were:

1C Morrison Knudsen Co., Inc., Boise, Ida.	$366,940
2 J. A. Terteling & Sons, Inc., Boise, Ida.	497,050
3 Pacific Bridge Co., San Francisco, Calif.	847,150

Bids: 1-20-51 Items	Unit	Quantity	Unit prices 1 C	2
Hndlg disch & unwatering	ls	1	$100,000	$190,000
Exc. for spillway apron	cy	300	$15.00	$20.00
exist conc 3" & less	cy	750	18.00	12.00
over 3" deep	cy	50	280.00	67.00
Dr for anch & gr brs in pl.	lf	1,800	4.00	6.50
F&h cement	bbl	3,750	6.00	10.00
Conc in spllwy apron	cy	5,000	40.00	45.50
Pl reinf bars	lb	27,000	0.12	0.15
F&weld st pls on drum gates	ls	1	$2,000	$5,250

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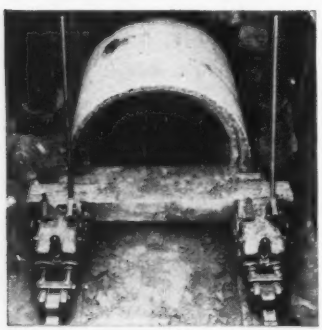

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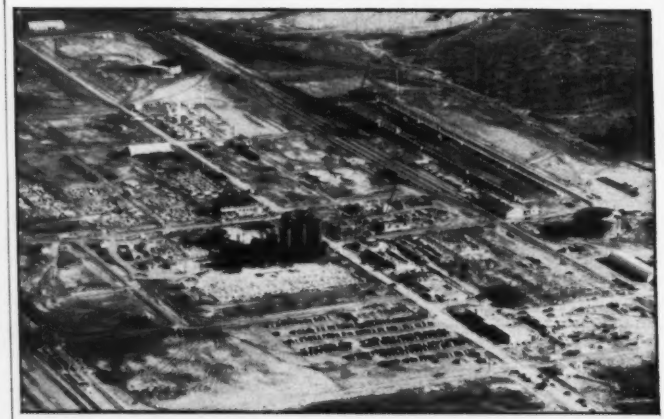

ALUMINUM ORE COMPANY'S twice-struck $55-million alumina plant under construction at Bauxite, Ark. (Leonard Photo Service)

Strikes blamed on state law

On the surface, a rash of labor difficulties in Arkansas appears to be caused by demands for higher wages and similar union demands. But leading union sources, along with some contractors, say that the so-called "Freedom-to-Work" law is the basic cause.

They argue that as long as Arkansas had little heavy industry and construction, and as long as unions and employers ignored the amendment, the "Freedom-to-Work" law meant little. But now, with a sharp upswing in construction of defense plants and an influx of out-of-state contractors, they say the "Freedom-to-Work" law is the irritant behind most labor eruptions.

• **The law**—The meat of the law is this: "No person shall be denied employment * * * because of refusal to join or affiliate with a labor union." It specifically bans closed shop contracts. In 1947, the legislature gave enforcement powers to Circuit Courts and made violations a misdemeanor punishable by daily fines of $100 to $5,000.

State Labor Commissioner C. K. Call holds it unlikely that either of two stoppages at the $55-million Aluminum Ore Company's project at Bauxite, Ark., would have occurred without the "Freedom-to-Work" law complicating matters.

• **First stoppage**—The first stoppage, with a loss of 20,800 manhours between Dec. 13 and Dec. 19, began with a picket line by 20 members of the AFL Pipefitters and Steamfitters Local 155 of Little Rock, to enforce their demand for a contract with Vogt-Conant Co. of Cleveland, Ohio, a subcontractor on the job.

Approximately 500 other workers observed the picket line. Vogt-Conant officials agreed to talk contract terms and picket lines were removed on order of the Little Rock Building and Trades Council.

• **Second stoppage**—The second walkout, from Feb. 19 through Feb. 24, with a loss of 38,400 man hours, involved the "Freedom-to-Work" law more directly.

Members of the Little Rock AFL Local 308 of the United States Tile and Composition Roofers, Dam and Waterproof Worker's Association, set up a picket line to protest the employment of three non-union men by Ketcher Roofing Co. of Little Rock, one of 24 subcontractors on the job. Approximately 1,200 workers were idled.

Circuit Judge Ernest Maner of Saline County issued an injunction against picketing, pointing out that striking or picketing to obtain a union shop, a closed shop or even a partially union job was prohibited by

Amendment 34, the so-called "Freedom-to-Work" law. Pickets were withdrawn, but the stoppage continued until Ketcher and union attorneys announced Ketcher had agreed to hire union workers.

• **No ruling on constitutionality**—The Arkansas Supreme Court has never ruled on the constitutionality of the law. However, it ruled in December, 1950, that picketing was illegal to force what would be, in effect, a closed shop contract. The case involved AFL Local 700 of the Brotherhood of Electrical Workers and Leon E. Taylor Electrical Co. of Fort Smith, in which the local sought a clause for cancellation on 60-day notice by either party. The local had made it plain that the clause would be invoked if Taylor did not discharge non-union men.

Call has not had any specific objections to the "Freedom-to-Work" law from out-of-state contractors, but he said it was common knowledge that many would prefer to deal with responsible closed shop union leadership than to face costly work stoppages caused by labor's resistance to the law. Labor takes the position, he says, that the law means less work because it creates more trouble than would come without it.

• **Other strikes**—Construction on two other Arkansas defense projects has been halted by recent strikes.

On Feb. 20, AFL Machinists Local 502 set up picket lines at $32-million Shumaker Naval Ammunition Depot near Camden, idling 2,000 production workers and 750 construction workers. Stoppage ended by Feb. 25.

On Feb. 28, a top-secret $40-million construction project by Blaw-Knox Construction Co. to expand the Pine Bluff Arsenal was halted when 1,500 members of the AFL International Brotherhood of Hod Carriers and Common Laborers set up picket lines to enforce demands for a wage increase. Approximately 2,000 skilled workers observed the picket line. Work resumed March 5.

• **Industry and labor together**—Arkansas workers and many employers are circumventing the law by asking and giving closed shops.

Labor generally can win its point despite the "Freedom-to-Work" law, but it would prefer to do it straight away. Many contractors would prefer to meet problems head-on without such a law to complicate issues. Both union and management sources agree that many strikes would never begin—or wouldn't last as long—if the "Freedom-to-Work" law was repealed.

(*Continued on next page*)

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Labor . . .

Co-operation eases WSB fine

The Wage Stabilization Board has cracked down—again—on another building contractor for paying excessive wages. This time the victims are Young-Loftus Construction Co. and E. J. Strecker, a joint venture. They agreed to these violations and these findings by WSB's Regional Enforcement Commission at San Francisco:

From Aug. 8 to Oct. 10, the builders paid above-ceiling wages to 20 AFL union carpenters and two apprentices on the construction of a tract of residential houses in the town of La Mesa, near San Diego, Cal.

Total wages of $9,171.07 were paid illegally in this way: whereas the legal rate for carpenter was $2.35 an hour, the builders paid 12 carpenters rates ranging from $2.65 to $3 and eight of them $2.50; whereas the legal rate for apprentice carpenters with one year of service was $1.39, the builders paid $1.75; and whereas the legal rate for an apprentice with less than 60 days service was $1.06, the builders paid from $1.10 to $1.30.

The amount of overpayment added up to $1,787.01.

• **Penalty**—The commission determined that only three-fourths of the overpayment—$1,340.26—should be disallowed by the Bureau of Internal Revenue as a cost for income tax purposes because of mitigating circumstances. They included the fact that:

• The builders, being from Los Angeles, got little cooperation from the San Diego Carpenters Council in supplying carpenters and had to bring 12 of them from Los Angeles. The wages paid these carpenters included from 20 to 55 cents an hour for subsistence.

• The 15-cent above-rate pay to eight carpenters was a premium for "finish work."

• The builders felt the legal rate for apprentices was inadequate under current living-cost conditions.

• The illegal wages were rolled back to legal ceilings when WSB first informed the builders of the suspected violation.

• The builders cooperated "to the fullest extent" with government enforcement officials.

• **Lesson for contractors**—It appears that violators who admit their error, can show extenuating circumstances and cooperate fully with investigators get off with lighter penalties.

In the first contested violation, Hedin Construction Co., of Washington, D. C., got hit hard. Whereas the amount of overpayment in wages to bricklayers by Hedin was only $9,676, the commission disallowed $40,000 as a cost for income tax purposes and, in addition, directed the Veterans Administration to deduct another $40,000 from the fixed price of a hospital Hedin was building for the VA. Hedin's appeal of these penalties is under consideration by WSB's National Enforcement Commission.

AFL hits CIO changes in Taft-Hartley law

The bill to exempt the construction industry from election requirements of the Taft-Hartley labor law—S. 1973—moved another step in Congress. It was approved, 4 to 1, with some amendments by the Senate Labor-management Subcommittee. Whether it will get through Congress in its present form—or at all—is debatable.

The AFL Building Trades Dept. is hopeful that the full Senate Labor Committee will delete some changes in the original bill made by the subcommittee to satisfy objections of the CIO. The CIO, led by the steel workers, had opposed the bill at hearings last September. The steel workers wanted some assurance that the AFL crafts could not use the amendment to get steel mill construction and repair work which might otherwise be done by CIO members.

One of the demands of the steel union in the basic steel contract dispute now before the Wage Stabilization Board is to prohibit steel plants from "contracting-out" maintenance, repair and construction work.

• **Contractors object**—The AFL building trades and the Associated General Contractors both urged the WSB not to go along with this demand of the steel workers. In a statement to WSB's steel panel, James D. Marshall, AGC's assistant managing director and manager of labor relations, protested that granting the steel union's demand would result in:

"An illegal combination of union and employer in restraint of trade; an illegal boycott of the products and services of the construction industry, and an illegal closed-shop condition for an uncertified union."

As a concession to the CIO, on this point, the original bill was amended so that it would apply only to employers "primarily" engaged in the building and construction industry. In other words, not to any manufacturing firm doing some construction work.

Another concession to the CIO sets up a streamlined procedure under which a union could challenge the bargaining rights of an AFL craft union after work has begun by asking for a decertification election. A contract held by the AFL could not stand in the way of such an election, and the election would be held within 10 days.

• **AFL objects**—Richard J. Gray, president of the building trades dept., objects especially to limiting the bill to employers "primarily" engaged in construction because then the union could get no help from it on most plant expansion work. He also thinks 10 days is too short a time in which to hold a decertification election. It should be at least 20 days, he feels.

As amended, S. 1973 retains the original provisions (1) That contractors and unions in the industry could sign union-shop contracts before work is begun on a project and before a representative number of workers are on the job and (2) that under a union shop the worker could be made to join the union within seven days instead of the 30 days now specified under Taft-Hartley.

There is another significant change in the bill. It is a provision that the Taft-Hartley law, as amended, would override any state labor laws where commerce was affected. This would nullify right-to-work laws in a score of states which do not permit union-shop contracts [see lead article page 40].

Contractors charged with wage-hour evasion

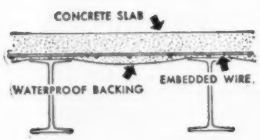
Some rodmen, engineers, transitmen, truckdrivers, well-drillers and working foremen worked over 40 hours without overtime, and some watchmen and janitors got less than 75¢ an hour working for seven contractors on the New Jersey Turnpike. These facts were revealed by Frank J. Muench of the U. S. Department of Labor in warning contractors on New York State's Thruway to obey the Federal Wage and Hour Law.

Muench said that the seven contractors—who handled nearly 75% of the roadbuilding on the New Jersey Turnpike—have agreed to pay $17,000 to 117 of their employees who were not paid overtime or who worked for less than the federal minimum of 75¢ an hour.

As an example Muench pointed to a watchman who put in over 100 hours a week on the Turnpike.

The law exempts professionals, administrators and executives when they are engaged in supervisory activities. Men on construction survey crews, however, are generally covered by the law's provisions and must receive time and one-half for overtime over 40 hours in the week.

mammoth decks of this huge new air terminal poured over **Steeltex Floor Lath**



Note, *in the cross section and closeup that the weight of the wet concrete forces the backing away, which permits the galvanized welded wire mesh to assume its proper position in the slab. Steeltex Floor Lath also performs two other functions. It permits work on the floor below while pouring is in progress and retains moisture to assist proper curing.*

Greater Pittsburgh Airport, destined to become an inland hub of international air traffic, is greater in size than LaGuardia and National Airports combined. The terminal, aptly described as a city within a city, is so extensive that it is able to contain a hotel, theatre, bank, public garage, nightclub, shops and restaurants in addition to its normal facilities.

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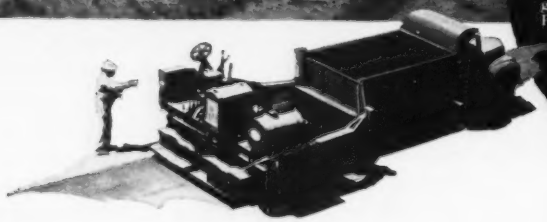

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CHUTE HARBOR at Memphis, Tenn., showing the closure dam and an outline of the future improvements expected on the off-river harbor. Memphis is in the foreground, Presidents Island in background. (Photographs, Corps of Engineers, U. S. Army)

Memphis lures new industry

The Memphis (Tennessee Chute) Harbor Project (ENR April 14, 1949 p. 70) is expected to generate one of the most extensive building programs the city of Memphis, Tenn., has ever seen. City and harbor officials think the project's maximum benefits are 15 to 20 years away, but there will be lots of building going on in between.

Construction is in two major categories—public and private. Public construction consists of the estimated $21.6 million the city and Shelby County will spend in improving it and making its industrial sites ready for new industry.

Private construction will be built as a direct and indirect result of the availability of the 7,500 acres of industrial sites to industry.

No official would guess what this figure would be but best estimates are that it will be in the hundreds of millions.

How soon will industry come and how fast will they build?

Frank C. Pidgeon, president of the Memphis and Shelby County Port Commission, gave this answer:

"Our first industry is expected to be in operation by late fall. After that, we expect others to come in at a fairly steady rate. Much, of course, depends on how fast industrial sites are made ready by the Corps of Engineers."

• **Background**—Which brings us around to another good question—what is the Tennessee Chute project?

The idea orginated with Maj. Gen. Max C. Tyler, retired president of the Mississippi River Commission.

It concerned a plot of land in the middle of the Mississippi River just off the Memphis shore known as Presidents Island. The island contains 7200 acres and is roughly eight mi long. The part of the river which flowed between Memphis and the island was known as Tennessee Chute.

The plan was to close off the chute at the head of the island and build flood-free, still-water industrial sites on both sides of the chute.

Officials of Memphis and Shelby County petitioned the federal government to build the closure dam across the chute and raise the present surrounding land above the level of floodwaters.

In return, local officials promised to furnish the necessary rights of way, provide customary maintenance and hold the U. S. free from damages as a result of the construction. They also obligated the city and county to furnish access roads, sewers, power lines, railroad trackage, docks, stalls, or slips necessary to make the project an adequate terminal.

• **Why do it?**—Proponents pointed out that existing water frontage along Memphis Harbor was being fully utilized and that "suitable sites having direct access to water transportation are not available for industries desirous of locating in Memphis and vicinity and the lack of additional frontage is restrictive in the commercial and industrial development of the alluvial valley in general and the Port of Memphis in particular."

It was further brought out that analysis of rate structures at the time showed an average saving of $1.60 per ton for water transportation over other types which, at a rate of 3-million water-borne tons a year handled by the harbor would mean a saving of nearly $5 million a year. Some proponents estimated harbor improvements would increase prospective future commerce by some 1.9 million tons a year, thereby benefitting the entire mid-south area.

After a thorough survey of the proposed job, the Mississippi River Commission recommended approval of the project.

• **The plan**—The project called for construction of a closure dam across the head of the chute with protective works and closure fill; raising of 960 acres on the island as an industrial site, and building of a levee along the Memphis side of the chute 11 mi long.

This levee, with necessary drainage structures and pumping plant will provide flood protection for an additional 6800 acres of prospective industrial sites on the Memphis side south of the city.

(*Continued on next page*)

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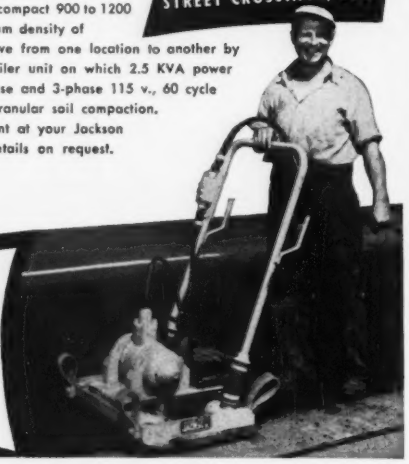

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Municipal . . .

BRIG. GEN. PETER A. FERINGA, president of the Mississippi River Commission, in charge of entire project. (Photograph, Corps of Engineers, U. S. Army)

The plan calls for the dredging of navigation channels 300 ft wide and to a low water depth of 12 ft along the industrial sites on both sides of the chute. A sanitary sewer will be extended from its outfall just below nearby Nonconnah Creek to the river, and the creek, which flows into the river, will be realigned in its lower reaches.

When the job is completed, it will provide Memphis with an additional harbor front of about four mi along the island fill and three mi along the levied area on the city side.

• **Work begun**—Work was started May 24, 1948. The entire project is under the supervision of Brig. Gen. Peter A. Feringa, president of the Mississippi River Commission. The project is under the immediate supervision of Col. Allen F. Clarke, Memphis district engineer, Corps of Engineers.

Lt. Col. R. C. Bahr is assistant district engineer. In the Memphis district, C. G. Hutton is chief of the construction division and John K. Patterson is acting project engineer.

When federal work is completed, the project will be turned over to the Memphis and Shelby County Port Commission for development, operation and maintenance. This is the commission of which Pidgeon is the chairman.

With one exception, the job has proceeded in an orderly fashion and according to plan. That exception came during the final days in the closing of the dam across the head of the chute.

• **Battle to close**—With conditions as near ideal as possible—a low river stage and good prospects for a further fall—the job of closing off the stream was started on Sept. 16, 1950. One dredge began placing spoil outstream from the Memphis shore. Two days later a second dredge began discharging slightly below the spoil bank of the first dredge.

The river continued to fall till Sept. 24, then suddenly and unexpectedly it began to rise again. Water began to flow through the narrow gap at a much more rapid rate. Then as the dredges sought to close the gap, the stream started to cut into the island portion of the embankment, making it recede with each new advance made by the dredges.

The battle of man against "Ol' Man River" was publicized in the press and radio and thousands of citizens were attracted to the scene, observing the struggle from nearby bluffs in Riverside Park.

At this point, engineers decided on a different approach. They took one of the dredges across to the island side and put it into operation at a point slightly downstream from the other one. The river crested on Oct. 2 and each of the dredges began to make slow progress.

A race then developed between the two dredge crews to see which would be the first to make the closure. Early on the morning of Oct. 9, the mainland spur was pushed into the island and the flow stopped.

The two dredges then went into action discharging across the low areas between the spurs and within 24 hours the dam was raised to a height sufficient to withstand any river stages in sight. The closure was completed to grade and section Feb. 6, 1951.

• **The score**—Here's the score on what has been completed to date:

The approach embankment comprising 2360 ft of access to the closure dam from Riverside Boulevard on Memphis and the closure dam itself plus wave-wash protection on dam.

An 8100-ft revetment along the head of the island of which 2700 ft are of willow matting and 5400 ft are of articulated concrete. Riprap was laid above the water-level.

The batture embankment, which provides additional fore shore adjacent to the dam and to the industrial

(*Continued on next page*)

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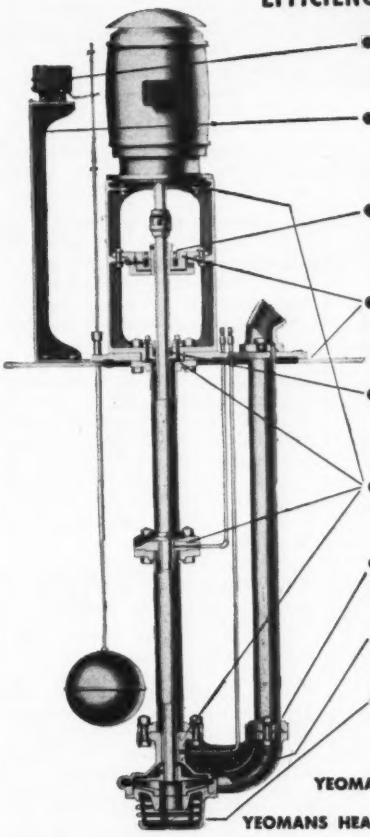

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Municipal . . .

embankment on the island. A system of three permeable pile dikes to insure against damage due to excessive velocities along the upstream slopes of the embankment.

The engineers' part of the project is roughly one-third finished. Of the estimated $21.6 million cost of the job, $7.2 million has been spent. Of the 960 acres for an industrial site on the island, 350 acres are now ready for industry. The contemplated 6800 acres for an industrial site on the city side of the chute is also still in the blueprint stage.

Future progress of the job will be governed by the size of annual federal appropriations, which, thus far, have averaged about $2.5 million a year.

• **Industry**—Construction on the island's first industry is expected to start as soon as highway and railroad facilities are completed. Current estimates are that a four-lane highway and railroad track across the approach and closure dam will be finished by June 1.

The railroad will be used by the Union, the Frisco and Illinois Central Railroads. The three combined serve 86% of industries in Memphis area.

Industries will also be allowed reciprocal switching with six other railroads serving the Bluff City. Memphis and Shelby County will operate a public terminal.

Housing projects cleared by test cases in courts

Three of four state supreme courts ruled favorably last year on the constitutionality of state urban redevelopment laws. Redevelopment laws now have been upheld by the high courts in seven states. Test cases are planned or pending in Illinois, Ohio, Rhode Island, Florida and Minnesota.

The latest approval was granted by Michigan's supreme court in upholding Detroit's authority to condemn slum property and sell it to private builders for redevelopment. "The public purpose of slum clearance is in any event the one controlling purpose of the condemnation," the court declared.

• **Detroit goes ahead**—Detroit Housing Commission has applied for a temporary $7,184,500 federal loan to speed redevelopment project in the Gratiot-Orleans section. Total expenditures on the project will be about $9 million and the 118-acre site will have 40 units of two story apartment terraces and 10 multiple storied apartment units.

The city is developing the slum section for resale to private developers. Expenditures include $6.2 million for land and $1,250,000 for relocating utilities, sewers, water lines and streets. Demolitions of buildings cost $300,000. Federal grants under the law will meet two-thirds of the cost.

$26-million Miami plan leads sewer activities

The City Commission of Miami, Fla., was given a choice between a $62.5-million comprehensive sewer and sewage disposal plan and a $26-million plan for a disposal plant and force and interceptor mains.

The second plan, submitted by the Miami Sewer Project Associates, was accepted and plans were made for two bond issues to finance the MSPA plan.

• **City fights disposal plant**—"All at once or not at all", seems to be the motto of Huntingdon, W. Va.

The city had been ordered by a lower West Virginia court to stop polluting the Ohio and Guyandotte Rivers, as previously ordered to stop by the state water commission.

Huntingdon appealed to the supreme court of the state, telling the court: "Unless every other city on the Ohio River does it, we don't see why Huntingdon should be compelled to spend $6 million for a disposal plant." The city also said the expenditure would exceed its legal debt limit.

• **Financing for treatment plant**—Sacramento, Cal., will finance a $5.4-million sewage plant by a sewage service charge and revenue bonds. Plans and specifications for the plant, prepared by the engineering office of Clyde C. Kennedy, will be completed by April 1 and then NPA will be asked to approve allocation of critical materials needed for the project. City Engineer E. A. Fairbairn estimates that work will start in the summer.

• **Nashville, Tenn., will vote on sewage bonds**—Mayor Ben West, of Nashville, has stated that the city must go ahead with plans for construction of an $11-million sewage disposal plant and expanded sewer facilities and has instructed the engineers to complete preliminary plans as soon as possible.

• **Sewer bonds defeated**—East St. Louis, Ill., voters went to the polls and decisively defeated a $10-million sewer bond issue which the city council had previously been prepared to pass with little opposition. The issue was designed to help meet the cost of new sewers and improvements in the present sewer system. The adverse vote will force the city officials to cancel contracts.

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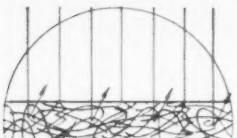

Diagrammatic enlargement of cross section of paper with high strength but low transparency. Fibers are surrounded by air, which has different index of refraction. Many light rays are bent back and do not get through.

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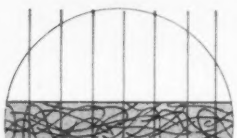

Same paper as "A", filled with oil or other fluid material, giving spaces between fibers same index of refraction as fibers. Reflection and refraction of light are reduced and paper becomes highly transparent. But transparency is not permanent because *fluids* "bleed" out.†

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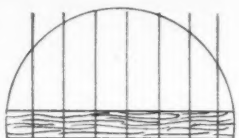

Papers are also transparentized at the mill by a "beating" process. The fibers are crushed, flattened and compacted. Reflection and refraction of light are reduced. But the process weakens the fibers and the strength of the transparent paper is low.

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† Prove this by making the "drafting tape test" Press a short piece of drafting tape on fluid-transparentized paper, and another on Albanene. Strip them off the next day and examine both papers. Notice that enough fluid has drifted out of the ordinary paper into the tape to destroy much of the transparency. And notice that Albanene is not affected. What drafting tape does over night, time will do naturally.

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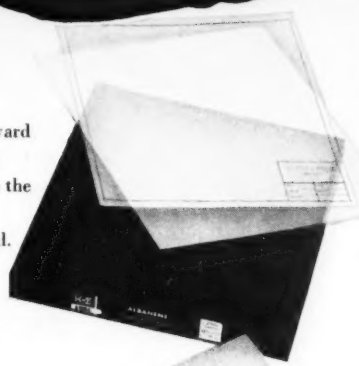
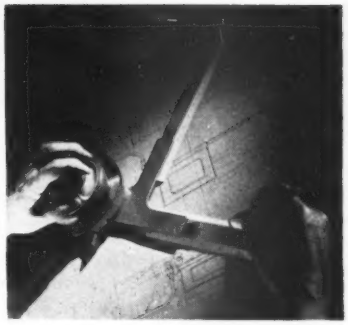


The Right Angle



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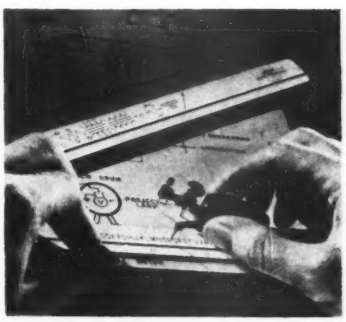

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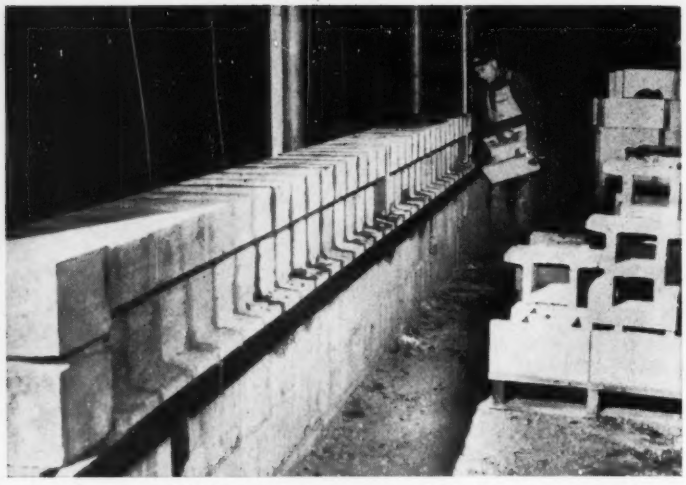


HOLLOW CONCRETE BLOCKS assembled on permanent fabricating beds in a plant in Nashville, Tenn., are prestressed to form beams for bridges and buildings. The prestress is applied with steel bridge strands.

Improved block beams cut erection costs

IN THE COTTON FLATS of West Tennessee, in October, 1950, two young Nashville engineers—Ross H. Bryan and Culver B. Dozier—built a short highway bridge. It was an important structure, despite its size. For it was the first prestressed concrete bridge in the U. S.

Since the first sloe-eyed mule was switched across that span about a year and a half ago, Bryan & Dozier have used prestressed concrete for 11 more bridges, two football stadiums and two buildings—a warehouse and a supermarket. The store building is especially significant because in it are continuous, cast-in-place prestressed girders—marking the first use of this type of construction.

Out of this experience, these engineers have developed techniques for mass production of prestressed concrete-block beams, cutting fabrication time down to about an hour. And they are 35 to 40% stronger and 15 to 20% cheaper than the beams in the first prestressed bridge.

• **Money and time saved**—Built in Madison County, about 15 miles north of Jackson, this pioneering structure consists of a cast-in-place concrete deck carried on 20 and 30-ft beams placed side by side (ENR Jan. 18, 1951, p 39). The beams were built up of 8x16-in. by 12-in. deep, machine-made hollow concrete blocks, which were buttered on opposite sides with mortar and threaded on a tensioning cable.

Cables are 7-wire bridge strands with anchorage fittings made by John A. Roebling's Sons Co. at both ends. Tensioning was done with hydraulic jacks. The first day an initial tension of 10,000 lb per strand was applied and the mortar allowed to set overnight. The next day, a final prestress of 26,000 lb was applied, giving the strands a prestress of about 125,000 psi.

Fabricated in the field by the county highway maintenance crew in three days, the beams were erected and the bridge opened to traffic in less than two weeks after construction began.

Savings in construction costs compared with other permanent-type structures totalled 40 to 50¢ per sq ft.

• **New market opened up**—But despite the speed of erection and economy achieved on this project, the possibilities of this type of construction had by no means been exhausted. Bryan & Dozier knew, for example, that field fabrication of the beams was an awkward undertaking. On each job, a new crew had to be trained in the field. Forms and fabricating beds possible under field conditions were not wholly satisfactory. On the other hand, plant fabrication could solve these problems.

Carroll Strohm, general manager of the Nashville Breeko Block Co., who had cooperated with the two engineers from the start, was highly receptive to their suggestion that he try plant fabrication. Setting up a new department for the purpose, he assigned a permanent crew to the manufacture

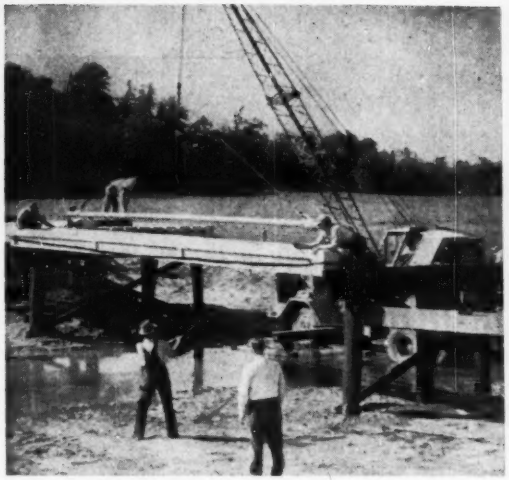
THE MEN BEHIND THE IMPROVEMENTS

Bryan & Dozier formed their partnership in Sept., 1949, on the theory that there was a need for specialized engineering services in Tennessee, particularly in the rural areas. They knew at the time that to compete with old, established firms, they would have to offer something different and better. Prestressed concrete was just what they needed.

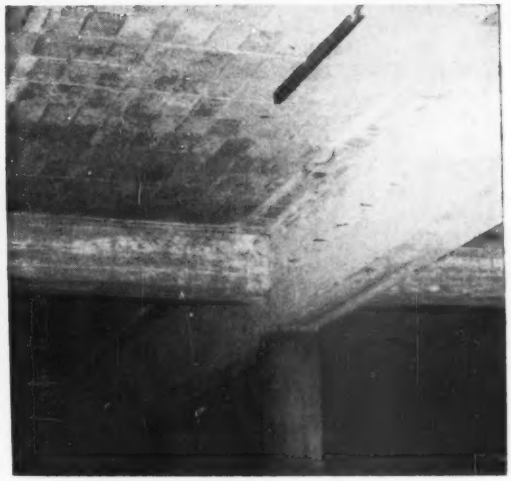
Early experiments were carried out in the basement of the old Exchange Building in Nashville. Later, they interested Carroll Strohm, Jr., of Nashville Breeko Block & Tile Co., in cooperating with them on the development work. Strohm had started as a bookkeeper with the company in 1932 and now is secretary, treasurer and general manager.

Ross H. Bryan is a 1933 civil engineering graduate of the University of Kansas. He worked for the Kansas State Highway Department, Panama Canal Engineering Department and Marr & Holman, architects, before forming the partnership.

Culver B. Dozier is a 1941 civil engineering graduate of the University of Tennessee. His previous experience included engineering work with the Tennessee Valley Authority, Douglas Aircraft, Ambursen Engineering Corp., Kellex Corp., and Marr & Holman.



BRIDGE DECK in Dickson County, Tenn., is built of block beams placed side by side. Spans are 22 and 36 ft long.



FLOOR SLAB made of block beams is supported on continuous prestressed concrete girders in a Nashville building.

of prestressed block beams. His company now is the only one in the U. S. fabricating such prestressed beams in quantity, although at least two other plants are turning out blocks for beams.

Strohm built six permanent, level fabricating beds and devised an assembly-line procedure. Output is equivalent to fifty 30-ft beams daily. Beams are handled in the plant by small power-lift trucks.

"The most appealing thing to me about this development," Strohm says, "is that it has opened an entirely new field for our product."

• **Changes improve beams**—Working together, Strohm and the consulting engineers also effected major changes in the design of the blocks. At first, they had used ordinary machine-made blocks, with the tension cables passed through the openings in the center of the blocks. This design had several disadvantages:

(1) Cables were exposed to corrosion. Though the strands were galvanized, this did not afford maximum protection.

(2) Strand end fittings are expensive—they cost about $23.50 a beam.

(3) Strands were not bonded to the concrete. Therefore, the beams lacked the higher reserve strength and better crack-control properties under overloads possessed by beams with prestressing steel bonded to the concrete.

To eliminate these disadvantages, Bryan designed a new end block, which now is being used exclusively. It has a groove in two sides and in one end. In beams now being produced, the tensioning cable is placed on the outside of the beam and is wrapped around the new end block in the grooves. It is anchored with standard fittings at the opposite end of the beam. This design eliminates one end fitting, thereby cutting $11.75 off the fixed cost.

When the beam is in position in a structure and the top deck is poured, concrete is placed at the same time between the beams, embedding and bonding to the strands. Tests show that bonding of the steel in this manner increases the ultimate strength of the beam about 40% and tends to keep down the size of cracks when the beam is heavily overloaded. The concrete also protects the steel against corrosion.

Blocks are either 8, 12 or 16 in. deep. For bridges up to 30-ft span, 12-in. blocks are used, and for longer spans, 16-in. blocks. With these blocks, Strohm is fabricating beams from 10 to 45 ft long.

Maximum desirable length for factory-assembled members is considered to be about 50 ft. Longer beams would be difficult to transport.

• **Continuous girders**—A departure from the technique used for bridges was made in the supermarket building in Nashville mentioned previously. The second floor of this structure, designed for a 100-psf live load, consists of 8-in. block beams supported on cast-in-place prestressed concrete girders.

The building is 90x100 ft in plan, with a single row of interior columns spaced 20 ft apart down the center. Supported at midpoint by these columns, the prestressed girders extend from wall to wall in the 90-ft direction. They are 20 in. wide and 42 in. deep. After the concrete had attained sufficient strength, they were prestressed with twelve 1-in. dia bridge strands, which were anchored at the ends of the members. The strands were positioned near the top of the girders in the region of negative moment, near the bottom in areas of maximum positive moments and close to the neutral axis at the ends.

Spanning the 20 ft between the two-span continuous girders, block beams were placed side by side to form the floor slab. Each of the beams was prestressed with one 0.6-in. diameter bridge strand. To support a wall in the second story along the centerline of the building, a longitudinal reinforced concrete girder was inserted between the interior columns. A hung ceiling was later installed, covering this construction.

All the work on this structure was performed by the regular construction personnel of the contractor, Allan Murphy. The only major deviation from conventional practice was the prestressing of the continuous girders, which was carried out at a total cost of less than $24 per girder under the supervision of Bryan & Dozier. Three laborers were required for this operation.

"We are well pleased with the way this job turned out," Dozier says. "We firmly believe that contractors are missing a mighty good bet by not getting familiar with the possibilities of this type of construction. The saving in steel is obvious; the work is much less burdensome than reinforced concrete due to the fact that there is no steel to tie and get in the way while pouring concrete; and the results obtained are excellent."

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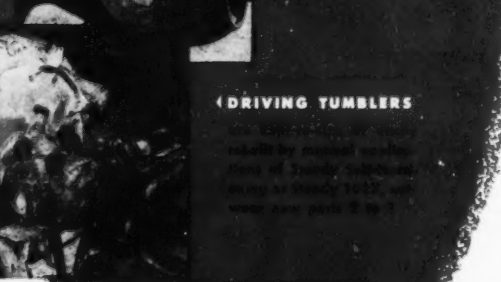

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• It doesn't make sense to carry out combustion to complete destruction when 80 to 90% reduction in volume can be realized in a very short burning period.

• There's no need to strive for an organic-free residue when the ash is buried as a sanitary landfill anyway. Insects and rodents can be controlled in fill operation.

• Why not burn the material with economical volume reduction in mind so as to conserve capacity in dump sites but not lose that saving through expensive over-burning?

Ralph Stone and H. F. Ludwig, who directed a study of economics of municipal incineration at the University of California, have come up with these conclusions.

Municipal refuse incinerators are costly to construct and to operate. Designers who fully consider methods of operation—refuse storage, charging, ash removal and disposal—can effect real savings in both construction and operating costs, say Stone and Ludwig.

Operation of municipal incinerators as "destructors" producing relatively inert, organic-free ash is a carryover from British practice that used ash residue in brick making or road construction. In only a few isolated instances in the U. S. is the ash so used: it is disposed of as landfill wherever possible—at an appreciable hauling cost.

NEW INCINERATOR in Yonkers, N. Y., was recently put into operation at a cost of $1,100,000. The 450-ton-per-day mixed refuse plant is a bin-and-crane type embodying much of the latest in design.

• Why pay for "destruction"?—If incinerator performance is judged in terms of volume reduction, ratings on capacity may differ greatly from those now used.

For example, the Miami (Fla.) incinerator, originally designed and rated at 350 tons per day, has been successful in reducing in excess of 1,000 tons per day of combustible refuse. To be sure, the residue is by no means organic-free. But the volume of ash to be disposed of is about 25 percent of the volume of material fed into the incinerator.

In terms of disposal land, this means extending the use of landfill sites from three to four times as long as would otherwise be realized. In addition, the burned residue compacts in normal landfilling operations such that final consolidation is accomplished much quicker than with unburned refuse. Reclaimed land will thus be available for park or other use at a much earlier date. It should be understood that only areas without available landfill areas need incinerators; sanitary landfill is cheaper than incineration where it can be used.

Complete incineration versus incomplete burning followed by landfill must be studied to determine economics and feasibility in individual cases. And cost of soil cover for incompletely burned fill figures in. No incinerator oxidizes all organic matter, and certainly the performance of an incinerator should be determined by more than the ability of the plant to oxidize almost completely the organic matter which is contained in the refuse, say Stone and Ludwig.

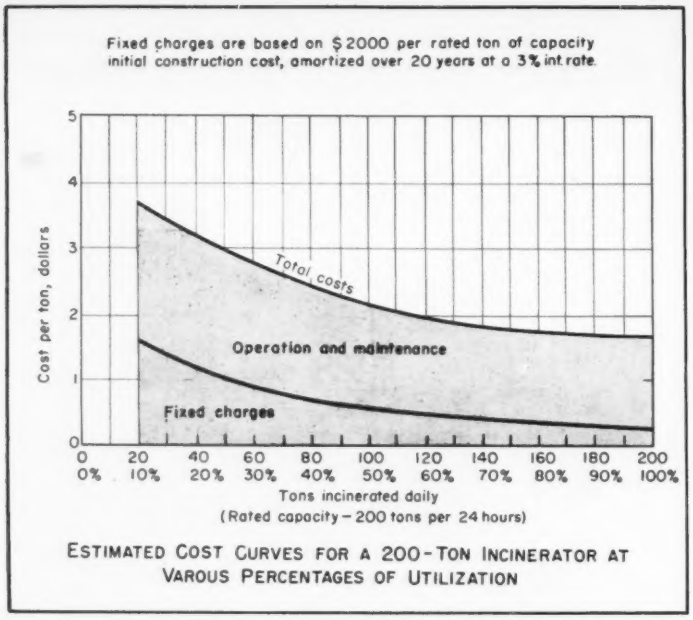
• 8-hr vs. continuous operation—To reduce unit operational costs, an incinerator should be operated as many hours per day as is feasible.

Fixed charges (bond interest and redemption) against the incinerator continue even if only part of the capacity is utilized.

Labor and maintenance costs of the incinerator will vary only slightly from one to two or three-shift operation (cost per ton of refuse for labor used in operating a refuse incinerator will not be much affected one way or the other by continuous operation).

But total cost per ton of refuse will be reduced significantly through increased utilization of the incinerator capacity. Plant storage costs required for a plant operating on a 24-hr basis represent an insignificant amount of the total plant construction expense. The accompanying chart (next page) emphasizes importance of maximum utilization of incinerator capacities to reduce unit burning costs.

• Peak load vs. design capacity—Cities having large peak loads, seasonal in nature, should design incinerators


Fixed charges are based on $2000 per rated ton of capacity
initial construction cost, amortized over 20 years at a 3% int.rate
Cost per ton, dollars
Total costs
Operation and maintenance
Fixed charges
0 20 40 60 80 100 120 140 160 180 200
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Tons incinerated daily
(Rated capacity – 200 tons per 24 hours)
ESTIMATED COST CURVES FOR A 200-TON INCINERATOR AT VAROUS PERCENTAGES OF UTILIZATION

ESTIMATED COSTS plotted versus incinerator utilization percentages show economics in full use. Fixed charges per ton incinerated diminish with more intense incinerator use.

capable of handling only the more normal loads. Landfill can then be used to dispose of material in excess of incinerator capacity during short periods of peak loads. This is an economical means of reducing incineration costs by assuring maximum operation of the plant at all times although load may vary.

Importance of capacity utilization in incineration is illustrated in the chart: At 20% of capacity, it is estimated that a plant will operate at $3.75 per ton of refuse burned, while at 90% of design load the cost could be reduced to $1.75 per ton.

• **Waste heat utilization**—Combustible refuse contains from 7,000 to 9,000 Btu per pound on a dry basis and from 3,000 to 6,000 Btu per pound when wet. Incinerator practice has indicated that from 1 to 2 lb of steam feasibly can be produced per pound of refuse. Use of this heat can reduce the heat energy ordinarily lost and can encourage high temperature continuous operation, which also will make more efficient the control of smoke.

Heat energy is a valuable commodity and should be used in steam-operated power generators to pump water or sewage, or to heat buildings, thereby reducing the net costs of incineration. Heat utilization and refractory maintenance are other arguments for continuous operation since high burning temperatures should be continued for overall efficiency.

Miami, Fla., produces enough steam daily to drive turbine pumps that pump 80 percent of the municipal high pressure water supply, steam-clean all refuse collection equipment, and sell the remainder to a nearby hospital.

• **Salvage**—Salvage operations serve a dual purpose: they reduce the quantity of refuse to be handled and provide revenues through sale of paper, glass, tin cans and garbage. Economy of salvage operations is affected by many factors. The most important is a ready market for the materials salvaged. That market has existed for some time in many places.

Again in Miami for an example, extensive salvage efforts completely finance the city's refuse disposal (taxes cover collection). A bonus paid to collection crews is incentive enough to net the city $60,000 a year on sale of scrap, for which it pays bonus checks averaging $15 per week. A couple of cents a pound are paid for rags and metal.

Burned tin cans, too, are salvaged, magnetically, from incinerator residue to be sold for an annual income of another $50,000.

• **Continuous charging vs. batch charging**—Cranes or conveyors to charge incinerators continuously can generally

	Over 100,000 Average of Cities Using Incinerators	25,000 to 100,000 Average of Cities Using Incinerators	25,000 to 100,000 Average of Cities Using Landfill	10,000 to 25,000 Average of Cities Using Landfill
COLLECTION COST PER TON:				
Combustibles	$6.81	$8.36		
Non-Combustibles	5.78	7.65		
Garbage Only	8.70	9.12		
Garbage and Other Refuse Combined			$5.63	$6.28
DISPOSAL COST PER TON:				
Incineration	**2.41**	**2.68**		
Landfill			.55	.83
Total Cost Per Capita Per Year for Complete Program	2.76	2.82	2.18	2.65

ACTUAL COSTS (averages) for Ohio cities with satisfactory garbage and refuse programs, as reported by the Ohio Department of Health. Generally, incinerators handle just part of a city's refuse since landfill is cheaper.

cut costs and improve combustion characteristics. But only through studies of the particular refuse to be burned, the combustion phenomena and suitability of methods, can the most desirable charging scheme be determined for a specific project.

The major incineration cost is labor, and designs that limit labor requirements consistently prove most economical. The present trend in U. S. incineration practice is toward increased, improved mechanization—a factor already reflected in less labor use and lower incineration costs in most sections of the country, according to Ludwig and Stone.

• Ohio digs up some figures—Ohio's Department of Health has been working on a study of storage, collection and disposal of garbage and refuse and has recently put out a preliminary report.

Concerning incineration, it states: "Some cities using incinerators, due to insufficient capacity, often find it necessary to divert" some combustibles to dumps in seasons of extra heavy collection. The University of California investigators had concluded (above) that this isn't a bad idea, that it is extravagant to provide capacity for peak loads.

Incineration cost was found to be on the order of $2.50 per ton in 33 Ohio cities. (Of the 121 cities studied, over 45 percent still feed garbage to hogs and dump other refuse. But seven out of eight cities larger than 100,000 do incinerate.)

• Applying some of the principles—In Brookline, Mass., a new mixed-refuse incinerator is about ready for first operation. Several years' study went into it; Superintendent of Public Works W. A. Devine traveled far and wide for ideas. Arthur L. Shaw of Metcalf & Eddy handled the new incinerator's design.

It is a bin-and-crane type with two mechanically stoked furnaces having a total capacity of 300 tons per 24 hr. Earth-fill ramps lead to and from the enclosed dumping floor adjoining the bin. New 25-cu yd trucks entering the plant will be weighed on a 30-ton platform scale with a device for automatic printing of weigh tickets.

Refuse will be dumped into a concrete bin of 900-cu yd capacity from which it will be transferred to the charging hoppers of the furnaces by a 4-ton electric crane with a 2-cu yd clamshell bucket.

The two 150-ton furnaces are equipped with motor-operated charging gates and hand-operated ash gates. The latter permit discharge of spray-quenched ashes from conical ash hoppers into trucks driven into the ash tunnel beneath the firing chambers. Combustion will be aided when necessary by forced draft fans discharging preheated air beneath the grates and by auxiliary oil burners. Special attention has been given to ventilation to minimize the escape of objectionable odors (it's a residential neighborhood) and to provide optimum working conditions for the operators.

In anticipation of possible future salvage operations, space is available at the charging level for installation of sorting belts or other handling equipment.

A 900-ton-per-day garbage and refuse incinerator that Miami, Fla., hopes to start building this year has been bid by Nichols Engineering and Research Corp., New York City, at $2,898,000—a price low by $752,000.

Revenue from steam and salvage will bolster a $200,000 per year tax on city funds to help pay off a $5-million bond issue.

• Incineration vs. composting—Prices paid for garbage by hog-feeders have a direct effect on incinerator economics in some localities. Indeed, the new Brookline plant described above will have to work in competition with some attractive local bids for edible garbage.

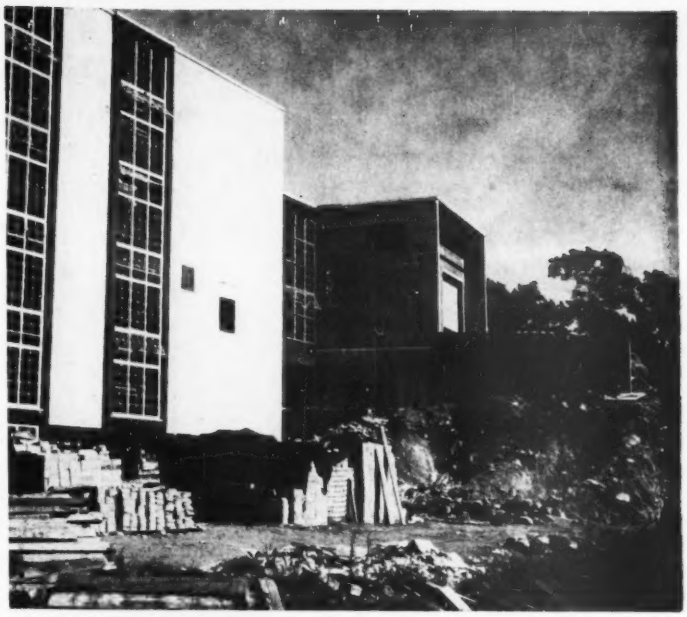
Composting, too, may get into competition with incineration in some localities. Harold B. Gotaas, professor of sanitary engineering at the University of California, had this to say after a 1950 trip abroad: "The time is not far off here in the United States when composting, together with reclamation of metal and paper, will be economical."

Professor Gotaas had just come back from The Hague, Netherlands, where refuse of 600,000 people is shipped 200 miles, composted and sold to farmers for that portion of the cost above what the city would normally pay for disposal by other means.

Latest report from abroad comes from Denmark where a high-grade compost-fertilizer plant is now said to be installed in 12 cities. Garbage is fed to a rotary silo which by rotation keeps it exposed to air to prevent smells. Contents are mixed and moistened to prevent dust. Mixing promotes breakdown of material into small particles, then comes fine grinding. Non-grindables are eliminated, and the result is a powdery fertilizer.

Patented composting silos are marketed in the U. S. now and are already being proposed in competition to incinerators in localities having a market for fertilizer.

In research currently being done at the University of California, aerobic composting in the laboratory is being tested, controlling different factors such as temperature, moisture content aeration and mixing. Five to six-day composting has been successful on municipal refuse including garbage.

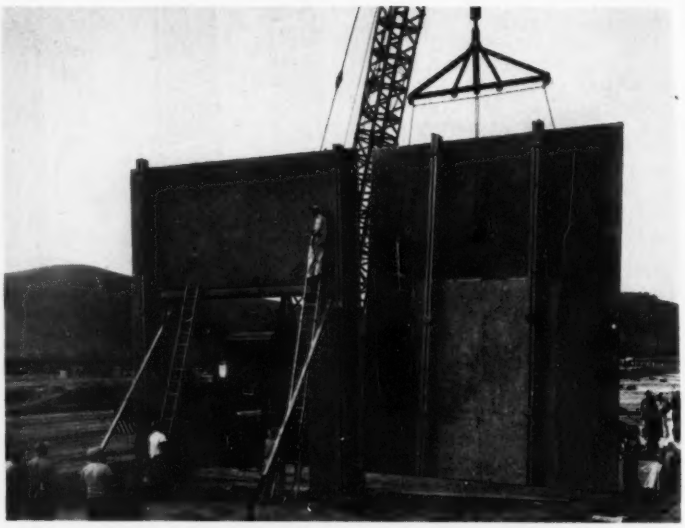


PLEASANT ARCHITECTURAL EFFECT becomes increasingly important for incinerators as they are built in residential areas—like this new Brookline, Mass., project just completed.

Some new wrinkles on panel walls

WORK IS BEING RUSHED at Pomona, Calif., to complete a large defense plant for Consolidated Vultee Aircraft Corp. The exact size and purpose of the plant was declared secret for this article by the Chief of the Navy Bureau of Ordnance, although current advertisements for workers at the plant clearly state its purpose and product. Despite this rather pointless censorship, the buildings offer features of design and construction that make them worth describing—regardless of their purpose.

The basic importance of the job rests in the type of building chosen—steel frame with precast concrete panel walls—and the fact that the Pomona plant is by far the largest yet undertaken by the designer and builder—Buttress & McClellan, Inc., who have specialized in this type of work. There is a possibility that it may be the biggest precast job ever undertaken. From that standpoint alone, the work would be significant, but its foundations are also of interest.



FIRST PRECAST CONCRETE WALL PANELS went up late last fall for Pomona, Calif., plant. Several hundred more of these 20x26-ft panels will be used to enclose the several buildings of the extensive installation.

• **Friction piles chosen**—An investigation of the site gave an unusually low value for direct bearing, but a rather good one for skin friction. This immediately pointed to the desirability of using friction piles, and a 20-in. dia cast-in-place type was selected for two reasons:

1. It was desired to maintain exceptionally good fixity at the base of the steel building columns. This meant that a machine-dug enlarged caisson head was economical as compared with a hand-dug cap for a driven pile.

2. In any case, a floor slab was desired that would be thick enough and sufficiently reinforced so that it also could serve as a tie between the tops of the piles. This meant that use of cast-in-place piles would add very little cost to the slab itself above and be-

(*Continued on p. 60*)

DRILL RIGS REMOVE DIRT for cast-in-place concrete friction piles that will support wall and interior columns. This foundation procedure furnished significant savings in cost over other support schemes.

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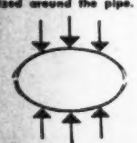

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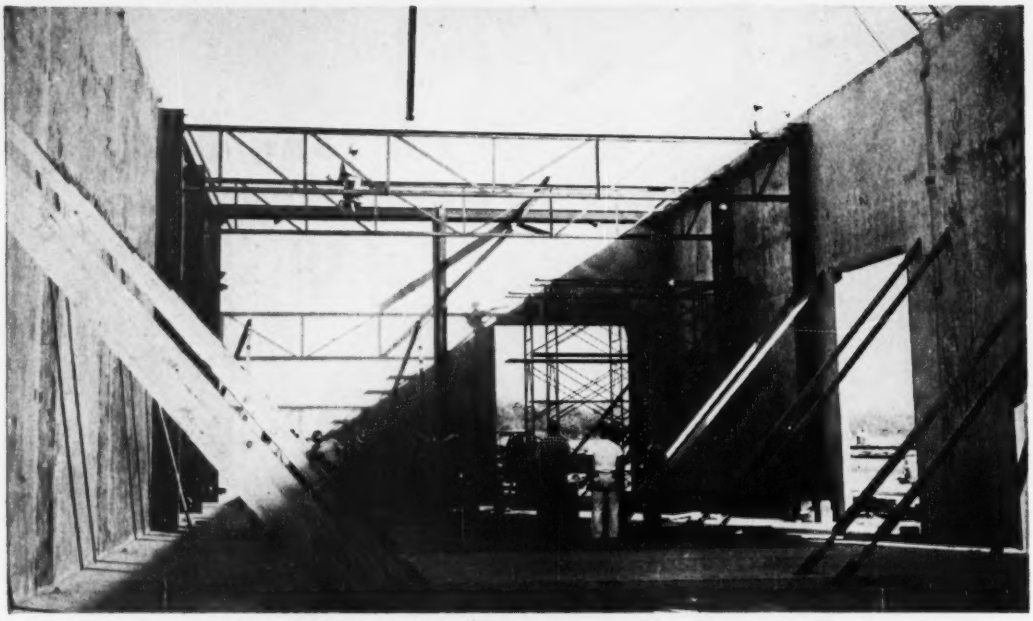


TYPICAL INTERIOR CONSTRUCTION of the defense plant building is shown in this small warehouse—first to be erected.

(*Continued from p. 58*)
yond that required by any other type of footing.

Reinforcing these structural reasons, cost figures strongly pointed to the cast-in-place pile footings. The cost analysis per column footing was:

1. Rectangular spread footings—$287.50.
2. Tapered pile footings—$203.00.
3. Drilled cast-in-place pile footings—$91.40.

Estimated settlement for spread footings was ½ in., and for pile footings ⅛ in. Besides that, the spread footings would require the use of heavier steel columns for moment resistance.

• **Grade panels precast**—When it came to considerations of the walls another innovation was introduced—use of grade panels to retain a fill inside the building, which was from 18 in. to 4½ ft higher than the surrounding area. The grade panels were precast on the ground, without the use of bottom forms. This saved money, and the resulting irregular surface could be placed against the building fill where its appearance was not objectionable.

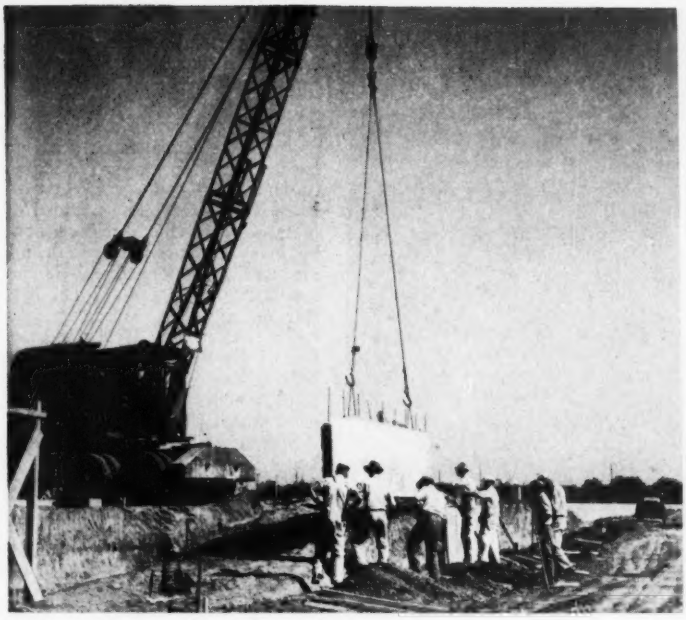
These 20-ft long panels were installed by crane at the rate of about one every 7 min. They were tied to the cast-in-place piles by a short poured-in-place column using dowels extending from the pile as reinforcing. The floor slab was then poured.

STUDS WELDED TO PLATES cast in the concrete wall panels anchor column brackets. This permits differential movement between wall panels and steel columns.

• **Tilt-up walls**—The 4⅛-in. thick precast wall panels, generally 20 ft wide and 26 ft high, were cast on the floor slab. Where adequate slab area was not available, panels were cast in stacks as much as five high. Such stacking also economized on formwork.

Extra panel reinforcing was used to resist lifting stresses, which were kept to a minimum by use of four-point pickup wherever possible. Lifting brackets were held by bolts inserted through sleeves and screwed into 1-in. nuts welded to ½-in. reinforcing rods. Where openings in panels did not permit a four-point pickup, further strength was obtained by bolting timber stiffeners to the panels.

• **Wall panels can move**—At least two 6x6-in. steel plates were embedded near

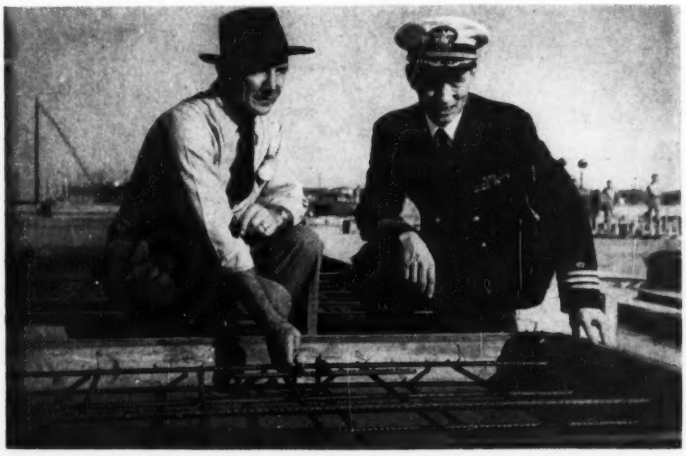


GRADE PANELS for largest plant building are set by crane. This building extends for a quarter mile. Dowels from cast-in-place pile form reinforcing for column extending to floor slab level (right). This short column holds the grade panels and supports the building column.

each edge of each wall panel to be later used in connecting the panel to the building columns by means of brackets. The type of brackets used also permits differential movement between column and panel in order to overcome one of the major objections to precast concrete work—development of unsightly shrinkage cracks.

The walls were erected in the normal manner and held in place by temporary adjustable supports until the steel columns and trusses were installed. Next, studs were attached with stud welding machines to the plates cast in the wall panels. Finally, the brackets were placed and the walls thus secured to the columns.

An expansion joint was placed each 240 ft along the wall, although the cross walls at each end, which are 600 ft long, are not provided with expansion joints.



INSPECTING WALL PANEL REINFORCING are H. D. Hollinshead, Buttress & McClellan vice-president, and Comdr. W. G. Byrne, CEC USNR, representing the Navy on the construction. Hollinshead's hand is on an anchor that will secure to the panel a steel plate for a column bracket.

• **Air conditioning system**—All the larger buildings of the project are completely air conditioned to protect against the southern California summer weather and the heat developed by the manufacturing processes. Refrigeration totaling about 5,500 tons is provided to maintain building temperatures below 80 F. Chilled water is circulated through coils in fan houses on the roof of the buildings for this cooling.

The same units can be used for heating by circulating warm water through the coils. Water is heated in small gas-fired hot water generators.

• **Credits**—A. B. Scoles is resident administrator for Convair at Pomona. Planning and construction work was accomplished under his direction, being supervised in detail by Routt A. Bryant, Jr., manager of plant engineering. Comdr. F. G. Jansen, CEC USNR, is resident officer in charge of construction for the Navy assisted by Comdr. W. G. Byrne, CEC USNR. H. D. Hollinshead, a Buttress & McClellan vice-president, represents that construction firm on the job as project manager. L. T. Evans was retained to make foundation investigations prior to start of work.

Placing aggregates dry . . .

. . . and injecting them with mortar permits . . .

Fast scroll case concreting

TWENTY DAYS WERE CUT from the power-plant construction schedule at Bull Shoals Dam when the U. S. Engineers issued a change order permitting the contractors to use grout-intruded concrete around the turbine scroll cases. In this type of concrete the coarse aggregate is placed first and then a special mortar is injected into the voids.

Original design called for placing regular concrete in ten 2-ft lifts, and in quadrants. Minimum time between lifts would be 3 days, and over-all scroll-case concreting time was estimated at 80 days.

At the job worked out, with grout-intruded concrete only two lifts were required and each was placed in the full zone of a scroll case instead of a quadrant. The time required was 60 days. About two weeks were lost because other parts of dam work had priority on placement equipment.

Bull Shoals Dam (ENR June 23, 1949, p. 44), is a flood control and power project on the White River, near Mountain Home, Arkansas. The power house has room for eight 70,000-hp turbines, four of which now are being installed. The embedment job covered scroll cases for the initial turbines.

• **How concrete was placed**—As far as possible the embedment was performed with regular dam concreting equipment. Coarse aggregate was taken from stockpiles intended for other work on the dam and power house. Conveyance to bins at the mixing plant was performed without altering the normal procedure. The batch and mixing plant issued aggregates for pre-placement. It also prepared the dry materials for mortar. Regular buckets, rail cars and hoisting equipment brought the mix-plant's embedment products to the power house.

Special equipment at the power house site included a water batcher, two mortar mixers, an agitator and a batter of four grout pumps.

• **Aggregate placement**—Aggregates were batched into the mixer with an excess of water (for washing), given one turn and dumped into concrete buckets on cars beneath. Bucket gates, dogged open 1½ in., allowed water to drain off during the haul and descent to the scroll cases. There the aggregates were placed either by direct dumping in the case of open areas or by a blowing procedure in the case of trapped space under the scroll case.

• **Grouting**—Dry ingredients—cement and sand—were weigh-batched at the concrete plant and chuted direct to buckets. A pozzolanic material was batched from sacks into a hopper on the mixer floor, then to the buckets, simultaneously with cement and sand.

Loaded buckets were transported to the power house, where they were unloaded into mortar mixers. There a small amount of a special intrusion agent was added before the grout was ready for the pumps.

Each grout pump fed a pipe, which discharged, through a hose, into pipe inserts set in the aggregates. Inserts were set vertically in open areas and diagonally to reach under the scroll cases. They also were placed through existing holes in the scroll-case speed ring. The last-named inserts made it possible to fill trapped spaces.

Each insert was pumped from 10 to 30 minutes, after which its hose was disconnected and transferred to another insert.

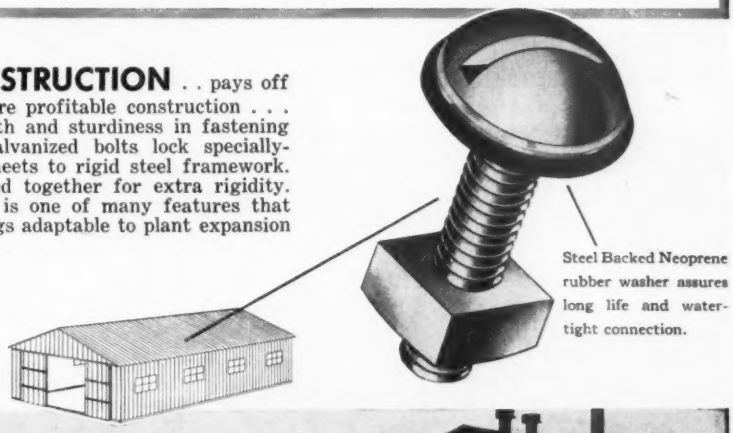
By continuous transfer of hoses, the mortar was brought up uniformly, assuring balanced (but low-pressure) uplift on the carefully-set scroll cases.

The mortar surface elevation was checked continuously with the aid of

(*Continued on p. 65*)

For Features that Pay Off...Buy Butler Buildings

BOLTED CONSTRUCTION . . pays off in faster, easier, more profitable construction . . . plus greatest strength and sturdiness in fastening metal to metal. Galvanized bolts lock specially-corrugated Butler sheets to rigid steel framework. Sheet laps are bolted together for extra rigidity. Bolted Construction is one of many features that make Butler Buildings adaptable to plant expansion or new construction.



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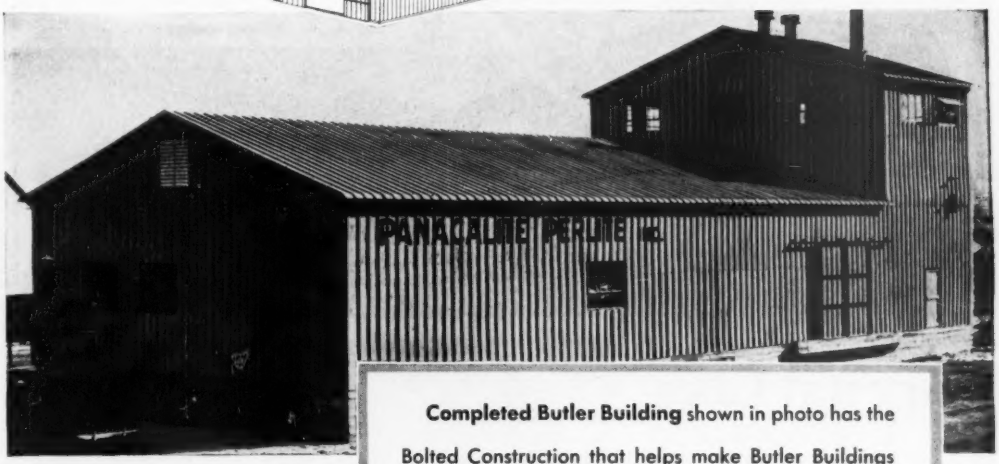

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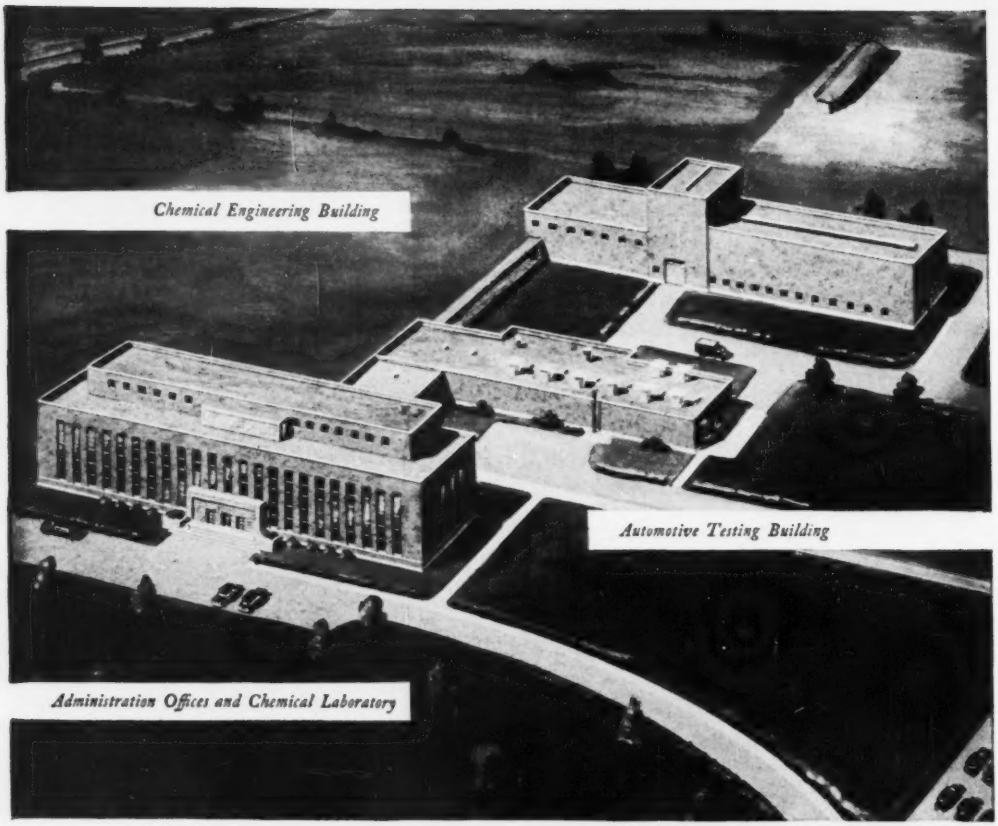
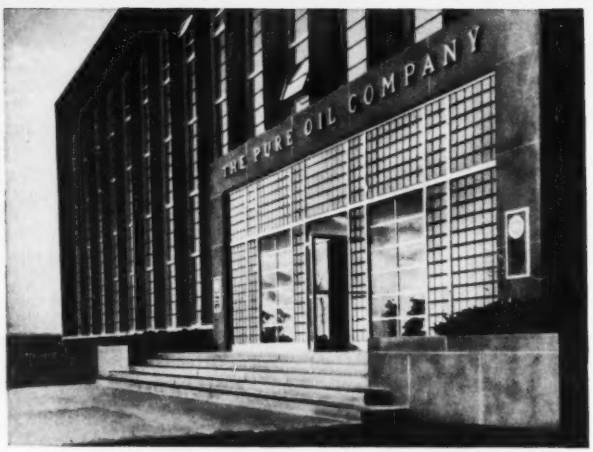


Crystal Lake
LABORATORY

When Pure Oil Company considered building a Research and Development Laboratory at Crystal Lake, Illinois, Stone & Webster Engineering Corporation was engaged to make preliminary studies and estimates. It later designed and furnished engineering supervision during the construction of the project.



STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY *of* STONE & WEBSTER, INC.

(Continued from p. 62)

slotted-pipe sounding wells in the coarse aggregate. The elevation of the mortar surface determined the time for changing of insert connections and the withdrawal of the insert pipes. Lower ends of insert pipes were maintained at least 1 ft into the mortar.

The intrusion mortar was placed at an average rate of 25 cu yd per hour, a quantity which produced about 60 cu yd of concrete. A peak production rate of 120 gross cu yd per hour was attained on several occasions, and a steady rate of 100 cu yd per hour of finished concrete was maintained for several hours during the middle portion of each pump. The average rate includes the starting rate, which is necessarily slow while a head of mortar is being built up around the inserts, and the topping-off rate, which also is slow to eliminate flotation of coarse aggregate. The normal overall pumping time for each lift (850 cu yd in the lower and 1,050 cu yd in the upper lift) was between 15 and 22 hours. The shortest period was 12 hrs.

• **Mix proportions**—The mix as designed by the Corps of Engineers called for a minimum cement content consistent with adequate strength (2,500 psi at 28 days) and suitable pumpability. On the basis of test cylinders prepared in advance of the work, the mix chosen to fulfill these conditions used the following proportions per cu yd of finished concrete: portland cement 324 lb; pozzolan 170 lb; sand 765 lb; water to cement-plus-pozzolan ratio, 0.54. The mix also included 4.9 lb of the intrusion agent, which was necessary to maintain the solids in suspension, eliminate setting shrinkage and improve pumpability.

As work progressed, it was found possible to pump leaner mixes without sacrifice of quality in the finished product. The last pump was made with only 212 lb of portland cement per cu yd. Cylinders prepared with this mix, using mortar tapped from the agitator during the operation, showed an average 28-day strength of 2,620 psi, and a 90-day strength of 3,550 psi.

• **Management**—Prime contractor on the Bull Shoals dam and power plant is Ozark Constructors. Ross White is project manager and M. H. Slocum is general superintendent. The mixing and pumping of the intrusion mortar for the scroll-case embedment was performed under subcontract by the Prepakt Concrete Co., Cleveland, Ohio under the direction of John C. King, chief engineer. John L. Kemple was resident engineer for the Corps of Engineers (now L. F. Sherman) and Don Basgen, chief of inspection branch.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Testimony of experts

"In most cases where the question is one of reasonable value, expert testimony is not only admissible, but in many instances, it is indispensable. In a case like this [one involving the value of labor performed], the opinion of the expert must be based upon a knowledge of what was done, but such knowledge may come to him in ways other than through the use of a hypothetical question. From his extensive experience in estimating the costs of producing beams and columns of the sort involved here, this witness could no doubt express a more accurate opinion from an examination of the drawings, than he could from a hypothetical question based largely upon such drawings. The fact that the witness did not personally observe the performance of all the work done merely goes to the weight of his testimony, not to its admissibility." Numerous cases are cited to sustain this conclusion.

The opinion further stated: "It is well established that the qualification of a witness to testify as an expert is primarily a question for determination by the trial court, and its determination will not be disturbed on appeal except when there has been a manifest abuse of discretion."[1]

(1) Timber Structures, Inc. v. C. W. S. Grinding & Machine Works, 229 P. 2 d 623, Supreme Court of Oregon, March 28, 1951.

Contractor's bond

The Supreme Court of New York, in a recent case,[1] has held that a person who had supplied materials to a subcontractor had no right of action against the surety and general contractor on a bond made by the surety and subcontractor as principals in favor of the general contractor.

The bond premium, pursuant to the terms of the subcontract was paid by the general contractor. The bond provided that the principal shall promptly make payment to all persons supplying labor and materials in the prosecution of the work.

The action was brought to recover the unpaid balance due for materials delivered to the subcontractor on the site of the job. The surety and the general contractor interposed the defense that the bond was not made for the benefit of a materialman and that he had no right to sue under it. The court sustained this contention, pointing out that while in many states[2] a materialman is allowed to hold the surety liable under circumstances, in New York, "the law appears to be clear that a materialman not named in the bond or not expressly given a right to sue, is precluded from recovery." Numerous cases are cited to sustain this contention.[3]

There are some New York cases which have held that a materialman might have the right to sue the surety given to secure the payment for labor and materials. These cases however are distinguishable, either on the ground that the bond was given pursuant to a statute to protect materialmen, or that the construction was being done for a government department, in which case the court implied a direct intention to benefit the materialman.[4] In some cases, the bond expressly authorized the materialman to bring such an action.[5]

A case in the federal court[6] has held that a bond given to secure "payment of all labor and material furnished to the contractor" was for the benefit of persons providing such labor and material and that such person could sue the surety on the bond.

(1) Daniel-Morris Co., Inc. v Glenn Falls Indemnity Co., N.Y.L.J., Nov. 29, 1950, p. 1361.
(2) Corbin, Third Parties as Beneficiaries of Contractors' Surety Bonds, 38 Yale L.J. Cases in 77 A.L.R. 21, 118 A.L.R. 57.
(3) Among numerous cases cited are: Eastern Steel Co. v Globe Indemnity Co., 227 N.Y. 586.
Duff v Board of Education, 255 App. Div. 493, 8 N.Y.S. 2d 245, affirmed 280 N.Y. 773.
(4) McClare v Massachusetts Bonding Insurance Co., 266 N.Y. 371.
Johnson Service Co. v Monin, Inc., 253 N.Y. 417.
Strong v American Fence Const. Co., 245 N.Y. 48.
(5) Graybar Electric Co. v Seaboard Surety Co., 187 Misc. 275, 283 N.Y.S. 522.
Maltby & Sons v Wade, 131 Misc. 143, affirmed 224 App. Div. 779.
(6) Ramsay & Gatlin Const. Co. v Vincennes Bridge Co., 50 F. 2d 600.

Customs and usages

"It is true that unexpressed terms may be introduced into a contract by virtue of usage and custom, but such usage and custom must be universal and uniform. 'It is also well settled that, to be admissible, the usage not only must be universal, but has become notorious by the long and uniform practice of those engaged in the trade at the place where the contract is made.' Barrie v Quinby, 206 Mass. 259, 265, 92 N.E. 451, 454, see Scudder v Bradbury, 106 Mass. 422; Haskins v. Warran, 115 Mass. 514."[1]

For other cases on this subject, see ENR, Oct. 6, 1949, p. 34 and Dec. 29, 1949, p. 41.

(1) Caggiano v. Marchegiano, 9a N.E. 2d 861, Supreme Court of Massachusetts, July 2, 1951.

Can your rear-dump

On relocation of U. S. 10 in the Coeur d'Alene Mountains near St. Regis, Montana, Roy L. Bair Co. is moving 600,000 yds. of granite and shale with 3 C Tournarockers. On typical 2400' cycles, their 3 "C's" are averaging 25 loads (a total of 252 pay yds.) hourly.

Here's how these advantages pay off

"Well pleased" at New Haven

Tournarocker's big 9½' x 12½' top opening speeds loading, reduces spillage for Fred Onuparik Construction Co. on their 70,000-yd. relocation of U. S. Highway 1 through New Haven, Connecticut. Working with a 1¾-yd. shovel, Onuparik's 2 "C's" deliver about 1200 pay yards of shot rock daily on a 2000' cycle . . . carry 10 pay yards (8 to 10 dipper-fulls) per load.

Boosts output at Mt. Carmel

Loaded with 15 yds. of clay, Tournarocker hauls 700' up 10% grades, 820' up 4% . . . strips 120 yards hourly for J. Robert Bazley, Inc. at their Mt. Carmel, Pa., mine. 4200' cycle is completed in 7.4 min. . . . smaller trucks take 7.9 min. for same trip. "We're particularly impressed with Tournarocker's clean dump and its safety when rear wheels are over bank," says Owner Bazley.

LETOURNEAU LET EQUIPMENT

R. G. LeTOURNEAU, INC., Peoria, Illinois

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

haulers compare with C TOURNAROCKERS?

Turn around in a 13′ 9″ radius

When Tournarockers work a cramped rock job, there's no time wasted "backing all over the place" to load or dump. Because of its 2-wheel prime mover and positive-power electric steer, 18-ton Tournarocker turns in any footing within 13′ 9″ radius (less than half the rig's 29′ overall length), is ideal unit for work in restrictive quarters.

Eliminate tire breakage in rough going

Tournarocker load is carried by four 21.00 x 25 low-pressure tires. These big tires reduce rolling resistance of duals . . . are bigger, heavier, stronger than duals . . . better adapted to withstand load and haul shocks. They have no divided face to wedge in rock fragments that wear and tear. They roll easily over rocks that might concentrate entire load on one or the other of the lighter duals, and result in bruising or breaking the fabric.

Absorb punishment without costly repairs

Tournarocker's 3-ply, steel-grid bowl resists damage normally done when big-chunk rock is loaded. As a result, most welding and patching is eliminated. In addition, because Tournarockers have no frame, sub-frame, springs, spring hangers, drive shaft, front steering wheels or hydraulic system, many trouble spots are eliminated . . . spare part requirements reduced . . . maintenance costs kept down.

Work and turn on steep grades in safety

With positive power steer, and instant electric controls, and 4-wheel, multiple-disc air brakes (3763 sq. in. total braking surface, more than 4 times that of other haulers), loaded Tournarocker may be driven at high speeds down narrow, steep winding haul roads with complete safety.

Drive anywhere . . . dump safely over bank

Power-proportioning differential (which delivers up to 4 times the power to drive wheel on firmest footing) — plus the extra flotation and traction of giant tires — get rig through footing that stops conventional haulers. In addition, because it has power on front wheels, Tournarocker backs safely to edge of fill, dumps load clear over bank . . . eliminates most dozer clean-up.

Interchangeable for further profits

For other jobs, you can easily interchange the 186 h.p. C Tournarocker prime mover with 4 auxiliary hauled units . . . 14-yd. Carryall Scraper, 18-yd. bottom-dump hauler, flat-bed, and 15-ton crane. Other Tournarockers (9, 35 and 50-ton) may also be interchanged with similar trailing units, each costing about 25% of original unit price. Prime mover change takes only a few hours. This equipment travels via highway or cross-country to their assignments. Ask your LeTourneau dealer for full details.

Carryall—Trademark Reg. U. S. Pat. Off.
Tournarocker—Trademark C156

25 loads daily on 3-mi. cycles at Newbury

Short 90° turns like this helped Frank W. Whitcomb speed production on a 245,000-yd. relocation of Rt. 103 near Newbury, N. H. Job records show the fast, mobile "C", hauling 1½ miles one-way through heavy traffic, delivered an average of 25 loads of high-void broken rock and common earth per 9-hour day. Loads averaged 10 pay yards in rock, 15 loose yards in earth.

2 "C's" replace 15 dump trucks in Ontario:

On 10-mile re-location of Provincial Hwy. 17 near Sault Ste. Marie, Muskoka Construction Co., Ltd. found 2 C Tournarockers their most effective haulers for moving 400,000 yds. of rock, earth, and sand. They used the two in place of fifteen 2 to 4-ton dump trucks on typical 2-mile cycle. The 2 "C's" delivered 150 pay yards per hour . . . 3000 pay yards every 20-hour working day.

** Trademark
* Trademark Reg. U. S. Pat. Off.

122 or 186 h.p. TOURNADOZER*	14-yd., 18-ton TOURNAPULL*	18-yd., bottom-dump TOURNAHOPPER**	20-ton, flat-bed TOURNAHAULER**	15-ton lift TOURNACRANE*

UP comes the old pavement as utility company starts work installing new gas mains in Los Angeles street . . .

DOWN goes the pipe (30-in. dia). In most areas, spoil was piled on remaining pavement to act as cushion . . .

TAMPER, wheel-mounted, goes to work on backfill to insure firm base for roadway.

SECOND TAMPER, with somewhat smaller foot for more careful work, finishes up the compaction job. . . .

Backfill lessons on a 30-inch pipeline

PIPELINE CREWS often think of backfill as a minor part of the total operation. But the work from the time the last joint is wrapped until the backfill is complete is a significant part of the overall job.

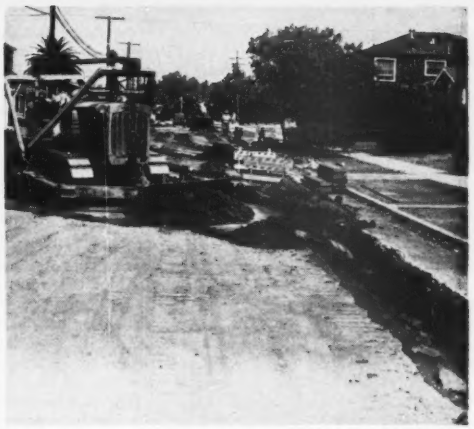
One of the big southern California gas companies recognizes this hard fact and does something about it. Each year the company digs more than a half-million feet of utility trenches in new construction alone. And there is nothing that emphasizes the importance of a dense backfill like pipeline work in the heavily trafficked streets of a large city.

The company recently finished a 25-mile installation of a 30-in. high-pressure gas main. Laid from Inglewood to the north end of the San Fernando Valley, the big line passes through 13.6 miles of Los Angeles proper, crosses many of the 58 soil patterns of southern California, runs under both residential and arterial streets.

• **Traffic: The great complicator**—Traffic over the top of installed utilities is the No. 1 problem for the gas company as well as Los Angeles city engineers. Unless trench backfill is placed to develop its maximum bearing value, pavement maintenance costs skyrocket.

The likelihood of failure in pavements laid over the utilities lines depends on the workmanship in the backfill underneath. Even in unpaved outlying areas, where fill formerly was puddled or uncompacted, the possibility of subdivisions and other developments makes better backfill methods necessary. More and more, it is becoming desirable to place compacted fill with a density ratio at least equal to the parent soil. And where load bearing values must be developed

IN goes sand to form a firm bedding around the newly-placed pipe. . . .



OVER the sand bedding goes the backfill, pushed by small bulldozer as soon as sand has been compacted .

FINISHED pavement shows no sign of settlement when backfill is well tamped.

to support traffic loads on a major street, even greater densities now seem indicated.

• **Mechanical tamping introduced**—Sufficient work had already been done over the years to point the way when the 30-in. line job was let. Mechanical tamping methods developed in the past decade had supplanted puddling, to some extent, and had proved that sunken trenches and bell holes could be prevented. Engineers had even agreed privately that compaction of backfill was absolutely necessary, from the standpoint of economics, if maintenance costs were to be reduced on the installation. They realized that mechanical methods to get this result at comparatively low cost were available, providing that field application of the equipment was good.

Other general fundamentals of soil science, too, had been well established: It was known that moisture content was the primary factor influencing maximum compaction obtainable with a given compactive force; in general, soils directly underneath pavements could be depended on to have a moisture content close to optimum. Observations had shown that density diminishes for all types of soils, except pure sand, at about the same rate when the moisture content is greater than optimum as when it is less than optimum.

Time had also proved the wisdom of recognizing soil boundaries, and of varying compactive methods to do the best possible job in any of the formations. A study of soils classification maps issued by the U. S. Department of Agriculture showed 58 principal formations in the Los Angeles area. Of these soils, 41 percent are predominantly sandy, 27 percent are predominantly loamy, and 32 percent are clayey. Some of the soils are tricky in the extreme. Ramona clay loam, for example, will drop 10 percent of its density if only 5 percent too much water is added beyond the optimum content. Characteristics of a few soil types are noted below:

Type of Soil	Maximum Dry Weight lb/cu ft	Optimum Moisture %
Altamont clay loam	100	17
Yolo loam	109	16
Chino silt loam	110	15
Montezuma clay adobe	110	15
Hanford fine sandy loam	111	15
Yolo clay loam	112	14
Oakley fine sand	115	11
Ramona clay loam	122	11
Ramona loam	123	10

• **The field job**—With these known factors and assumptions in mind, the pipeline job was let to two contractors, who moved in with a well mechanized approach. It included the removal of pavement over trench sites by power equipment, trench excavation by large ditching machines, the installation of pipe by field cranes with field welding, and the replacement of backfill by mechanical means. Only in a few sandy locations within Los Angeles city proper was flooding permitted at all.

Other factors which had great influence on the final results included an agreement whereby the City of Los Angeles would replace the pavement over the installation, and an agreement with the soils section of the city engineer's office to sample and test parent soil as well as the density of the material replaced.

A trench 42 in. wide and from 5 to

18 ft deep was made to hold the pipe, and the contractor's crews averaged 600-ft daily performances. This rate of progress made it necessary to replace the backfill in large daily amounts, at no sacrifice of density quality.

• **Tamping used**—Several methods of tamping were tried, but all except one showed low production. The method adopted for most of the project included two-foot lifts, shoved in by a small dozer, and compaction to required density by a special heavy-duty power tamper.

This machine is semi-truck-mounted, and sufficiently mobile and powerful to develop the rapid, high-quality compaction required.

With a tamping range of 18 in. to 15 ft wide, and from zero to 15 ft deep, the machine could deliver a blow of varying energy from 1 to 10,000-ft lb at a speed of 60 blows per minute. The varying energy is made possible by an automatic impact regulator valve. This device makes it possible to tap gently around high pressure lines, corroded pipe, tile lines, and other places where a light blow is desired at first. The light range of the blow was especially valuable for the first part of the backfill, close to the line. The heavier 10,000-ft lb blow was valuable later on, especially where cloddy material had to be shoved in.

It was impossible to escape this partly-compacted backfill condition, because all the equipment operated on the spoil pile of dirt in order to keep from damaging the streets. The last material, scooped off close to the pavement, had been partly compacted by the passage of tractors and other heavy equipment. It came off in chunky sheets, but the heavier blow of the mechanical tamper helped to break up these pieces and work them down to the uniform density necessary.

• **Sand beds**—To insure a firm bedding, sand was used up to the spring line of pipe, and the earth lifts were then brought up by power equipment. The earlier observation that earth under paved surfaces held close to its optimum moisture content proved to be true in this case, and little or no additional moisture was needed. One section near Ballona Creek, in a heavy gumbo material, had to be aerated for a few days because it contained an excess of moisture above optimum.

Throughout the life of the construction phase, the gas company paid close day-to-day attention to field work, and City of Los Angeles technicians made frequent samples as backfilling progressed. Sampling of densities was done according to the Modified AASHO method. Curves were plotted for each of the various types of soils, and field densities were made to simulate the parent soil as closely as possible. This, the engineers believed, would give a smooth finished pavement job over the pipeline; one that would not be inclined to develop rough places under changing traffic conditions in the future.

RESULTS OF MECHANICAL BACKFILLING METHODS

Type of Soil:	SAND		LOAM		CLAY	
Surface Conditions	Sank	No Sinking	Sank	No Sinking	Sank	No Sinking
Trenches: Filled, flooded with water, filled, truck rolled, and then exposed to traffic. Observations made 90 percent in residential streets and 10 percent in arterial highways.						
Number of cases	2	9	9	3	16	5
Average moisture	12	16	22	21	21	21
Average resistance	164 psi	187	66	71	152	315
Average density—L/cf	86	102	95	94	93	101
Total Observations: 44. Percent of Failure: 61.						
Trenches: Filled, power tamped by heavy-duty machine, filled, power tamping repeated, and exposed to traffic. 30 percent residential, 70 percent arterial.						
Number of cases	0	4	0	20	0	9
Average moisture		8		13		17
Average resistance		1300		1200		1230
Average density		102		106		104
Average apparent soil density		91		103		100
Total Observations: 33. Percent of Failure: 0.						
Bell holes: Alternate filling and compaction by hand-held pneumatic tampers, followed by exposure to traffic 36 percent residential, 64 percent arterial.						
Number of cases	3	9	2	17	11	27
Average moisture	17	8	14	13	17	16
Average resistance	395	775	1200	895	685	760
Average density		100	110	105	105	105
Total Observations: 69. Percent of Failure: 23.						

• **Conclusions**—Correlating the many observations made throughout the project, some definite conclusions were made, which seem sound and reasonable matters of policy. They are:

1. Soil boundaries must be recognized in planning the backfill for any major utility installation.

2. Soil tests, engineering, and conclusions which bear on the quality of the finished job should be reached in the field, if possible, by trained personnel with sufficient authority to act.

3. Field crews should have more training in the "why" and "how" of modern soil compaction, and a course of training should be given to a nucleus of key maintenance personnel so that backfilling over maintenance jobs is sound and long-lasting.

4. Better methods for performing the various backfill components, aside from the physical act of tamping, are needed. For example, the actual compaction of soil by the heavy duty tamper represented only a seventh of the total cost of backfill, or 3 cents per cubic foot. A method of bringing dirt back in faster and more uniformly is needed, and if jobs could be closed up tighter so there would be less lantern maintenance at night, and less finished trench waiting for pavement, sizable savings could be achieved in the total backfill operation. (There is an erroneous tendency to blame the mechanical tamping alone for these organizational rough spots in the other operations incidental to backfill.)

5. A faster, accurate, easy method of field soil density sampling is needed, especially for granular and rocky soils.

6. Wherever flooding can possibly be replaced by denser mechanical tamping, a better and less costly maintenance operation will probably result after the operation is finished.

Correlating the improved mechanical backfilling methods with some used in the past on other gas line work by the company, results shown in the accompanying table were noted.

Test results and extensive visual checking of the new job for surface failures has now corroborated all the early assumptions, and in the first six months after the new job was placed in service not a single pavement failure has developed. On the basis of these results, the gas company has concluded that the most rapid and economical way to replace backfill over its utilities in Los Angeles, in all but the most sandy soils, is to do the better job which modern power tamping equipment now makes economically possible.

The tamper used on this job was manufactured by R.P.B. Corporation, Los Angeles.

Using the RIGHT Wire Rope for the Job?

You'll get longer service life from wire rope if you do. Here are some points to keep in mind when you're selecting wire rope for any equipment . . .

STRENGTH

Don't send a boy to do a man's job. Make sure the wire rope you order has enough strength to take care of the maximum load—*plus* a necessary safety factor.

FLEXIBILITY

If your ropes undergo repeated bending over small sheaves, you'll need a flexible rope with maximum resistance to bending fatigue. Two things increase flexibility—smaller wires and preforming.

ABRASION RESISTANCE

Lang lay ropes, when properly installed, and constructions with large outer wires will help extend the service life of drag lines and other wire ropes that are subject to severe abrasive wear.

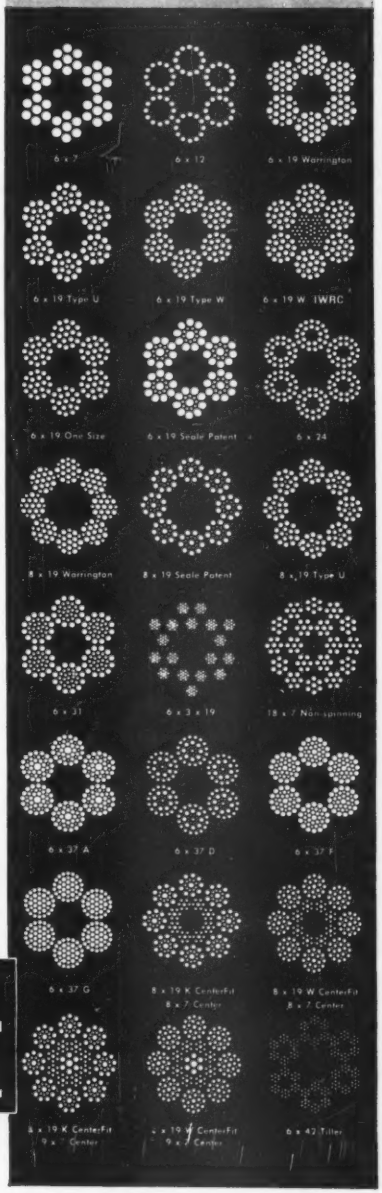
RESISTANCE TO CRUSHING

An independent wire rope center gives outside strands the support necessary to withstand crushing and distortion—large outer wires help spread the load over a greater area.

When you're looking for ways to cut operating costs, why not enlist the help of your nearest J&L Wire Rope representative? He'll help you select the *right* balance of these wire rope properties to get the longest service life on your specific type of equipment and operating condition.

Through years of research and actual operation in the field, J&L has developed a complete line of wire rope sizes and constructions. You'll find it profitable to cash in *NOW* on J&L experience and manufacturing know-how.

Select a Wire Rope that Fits Your Equipment Needs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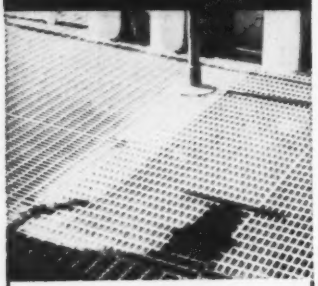

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Appropriation is sought to complete Inter-American highway to Panama

According to recent testimony of Edward G. Miller Jr., assistant Secretary of State for Inter-American affairs, before the House Committee on Public Works, the Department of State strongly believes that the Inter-American Highway should be completed as soon as possible and that United States cooperation to this end should be continued.

Cooperation on this highway is believed to be the single most important way in which the United States can help to promote economic progress and political stability in the underdeveloped countries of Central America and Panama. At the same time, the highway will provide a land route to the Panama Canal and will be of great value in preparation of hemispheric defense.

About $40 million dollars have been appropriated by Congress thus far for investment in the Inter-American Highway. A bill is now before Congress to authorize the expenditure of $56 million to enable the United States to cooperate with the governments of Costa Rica, El Salvador, Guatemala, Honduras, Panama and Nicaragua in the survey and completion of construction of the highway within the borders of those republics.

In 1950 the total imports of these six countries amounted to $202,000,000, of which 70% came from the United States. Proponents of the highway believe that most of the U. S. investment in its construction eventually will come back in the form of increased trade with the Central American countries.

Long pressure tunnel features Italian plant

Five firms are working on the construction of a new hydro-electric plant in North Italy, where the central plant is in a cave and the pressure tunnel is 5.7 mi long.

The work was planned to use an existing diversion plant on the Fiume Adige, increasing the head with the aid of the tunnel down to the new underground plant, which will have two 25,000-kva generating units.

The tunnel, with an 860-sq ft cross-section, follows the river on the right side, and is excavated in rock up to the central plant at Ala. Engineers from the Montecatini firm and others building this tunnel visited Krokstrommen in the Harjedalen province of Sweden to study problems similar to those they would meet in northern Italy. The rock has cavities, cracks and stratification. The tunnel will be lined with concrete throughout.

The tunneling jumbo consists of two motor trucks side by side carry-

POWER FOR SAO PAULO—A view of the 20,000-kw plant of the Americana hydro-electric plant of Companhia Paulista de Forca E Luz in the state of Sao Paulo, Brazil. This is one of three large power units of which the third is now being installed and is scheduled for completion in 1953. Sao Paulo city (pop. 2,218,800), the industrial center of Brazil, consumes more electric power per residential customer than Chicago.

ing drilling platforms on three levels. The mucking is done with diesel-powered crawler excavators. Haulage is by diesel trucks. Driving proceeds at a rate of 13 ft per day in each portal heading.

Liberia advances plans for road development

Liberia's road improvement program, to be financed with a $5-million Export-Import Bank loan, will be started soon with construction on about 47 mi. of highway outside the capital city of Monrovia. Private contractors will be asked to submit bids when the plans and specifications are ready in about two months.

United States technical missions are working with the Liberian government in preparing the program. It is proposed to improve and construct about 800 mi of primary roads eventually, but the immediate objective is to improve existing roads totaling nearly 300 mi. The capital investment of the full program is estimated at $13 million and the annual expense of maintenance more than a million dollars.

International Briefs

• **Seeks priorities**—Filemon Rodriguez, general manager of the state-owned National Power Corp. of the Philippines will come to the U. S. and go to Europe to negotiate for equipment for the construction of the Ambuklao water power plant and other projects. He will ask the National Production Administration for priorities on delivery. The Export-Import Bank has approved a $20-million loan to the Philippine government for the development of the Ambuklao project as a power for central Luzon.

• **Railroad to Negev**—French engineers have submitted to the government of Israel plans for the extension of the Israeli railway system to the Negev desert where rich phosphate deposits have been discovered recently. The proposition is to link Tel-Aviv to Beer Sheva, capital of the Negev. Plans also call for the modernization of the Tel-Aviv-Haifa R.R.

• **Tunnel progress**—Drilling is well advanced in the second section of the 13,760-ft tunnel through a mountain side at the Wahleach Lake hydro project of the British Columbia Electric Co. Work has also started on the power house and will begin soon on the 230,000-volt high tension power line to transmit the energy from the plant near Rosedale in the Fraser Valley to a distribution point in Surrey. The company has a $31,300,000 construction program for 1952.

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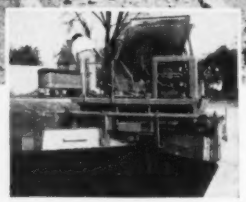

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OBITUARIES

Harold E. Chard, 58, **St. Paul,** assistant chief engineer of the Minnesota Highway Department, died March 1. He had been with the highway department 36 years, serving as district engineer at various points. For twelve years he was district engineer of the St. Paul-Minneapolis metropolitan area.

Robert E. Williams, president of Robert E. Williams & Sons Co. Inc., Buffalo, N. Y., general contractors, died Feb. 26. He had been in the general contracting business for more than 50 years. He was president of the Buffalo Builders Association from 1927 to 1929. He erected some of the largest office and school buildings in the Buffalo area.

Theodore R. Stocksdale, 68, lifelong construction engineer, died Feb. 27 in Washington, D. C. Before going to Washington in 1945, he worked at engineering in New York, Pittsburgh and in Panama.

Fred C. Claus, 61, district engineer for the New Jersey State Highway Department, died March 1 in Lawrenceville, N. J. He had been with the department for 30 years.

William T. Lyons, 48, president of the William T. Lyons Co., Inc., of Baltimore, Md., engineers and general contractors, died March 1. A graduate of City College of New York, Mr. Lyons was a civil engineer and served as a lieutenant commander in the Engineer Corps of the United States Navy during World War II. His firm has done extensive construction work at the Naval Academy at Annapolis, Md., and is currently enlarging and remodeling Bancroft Hall there.

Clarkson Steele, 61, a Rutgers graduate, 1911, died at Highland Park, N. J., March 5. He was borough engineer of Milltown 1917-43. In 1915 with F. G. Schneider he formed the Utility Construction Co. which built a number of major highways and bridges in New Jersey.

Charles Dingman, 66, engineer and architect, died at Palmer, Mass., March 5. He was the author of "Estimating Building Costs," "Accounting and Business Methods for Contractors," and other books in that field.

Morris W. Kellogg, 79, founder

and chairman of the board of The M. W. Kellogg Co. died in New York City Feb. 22. A graduate of Stevens Institute of Technology, 1894, he started a business in Jersey City, N. J., which pioneered in the fabrication of penstocks for the hydroelectric power industry. Today after 50 years, the company is one of the leading organizations of its kind, specializing in the design and construction of petroleum refineries and chemical plants.

Theodore Young, 42, city engineer of East Orange, N. J., for a number of years, died March 6.

Ernest A. Cleveland, 77, chairman of the Greater Vancouver water board, and a well-known British Columbia engineer, died recently. He had been railroad and hydraulic engineer, surveyor and town-planner. He served on the Alaskan Boundary Commission in 1894-95, and had represented the Dominion of Canada at three world power congresses.

William L. Butcher, 76, a civil engineer at one time employed by the then Boston Elevated Railway Co., and later on the staff of Metcalf & Eddy, Boston consultants, died at West Newton, Mass., Feb. 27. He was a graduate of the Massachusetts Institute of Technology's civil engineering course, in 1898.

Gordon Macdonald Gilbert, 52, engineering head of the Greater Vancouver Water District, died in North Vancouver, B. C., recently. He was an authority on deep sea diving, helicopter flying and mountain hiking, having used all of these in his 25 years of service with the Water Board. By helicopter he transported supplies for two dams at Palisade and Burwell lakes in many inaccessible districts of the North Vancouver mountains.

Lt. Col. George Edward Brown, 78, veteran of 50 years in the U. S. Corps of Engineers, and a pioneer in Miami's harbor development, died March 5 in Miami, Fla. He went to Miami in 1923 with the Army Engineers, designed entrance jetties there and in other southern Florida harbors, and helped clear the Miami harbor after the 1926 hurricane. He retired in 1944.

Gilbert W. Pettitt, 85, who spent most of his life working as an engineer on railroads, died March 6 in Arlington, Va. He retired in 1936 after serving 40 years in engineering capacities with the Chicago and Great Western Railroad.

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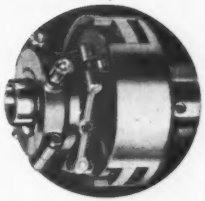

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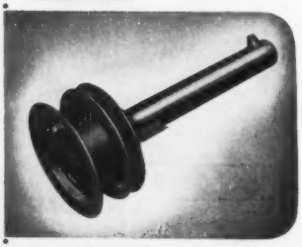

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Engineer of the year chosen by Texas society

Seven hundred members of San Jacinto Chapter, Texas Society of Professional Engineers, honored E. A. Craft, executive vice-president of Southern Pacific Lines in Texas and Louisiana, as "outstanding engineer of the year" at their annual banquet held at Houston.

The recipient of the chapter's engineering award heads one of Texas' largest industries. Nearly 20,000 employes serve Southern Pacific in Texas and Louisiana, making the railroad Texas' largest firm in size of payroll and number of employes.

Craft started his railroad career as a rodman for the Chicago & Eastern Illinois Railroad. He served as a major with the 17th Regiment, Railroad Engineers during World War I. Craft came to Southern Pacific in 1919. He worked up to engineer in the maintenance of way department and served in top management capacities prior to being named executive vice president at Houston in March, 1945.

Chicago planner appointed

Howard R. Olson has been made general manager of the Chicago Regional Planning Association through appointment by its board of directors. A graduate civil engineer of Iowa State College, Olson had engineering and construction experience in municipal development, buildings and state highways before joining the association in 1925 when the staff was first organized.

Careers . . .

• **Appointed**—Pennsylvania Governor **John S. Fine** has appointed **H. E. Moses,** of Harrisburg, consultant chief engineer for the State Department of Health, as Pennsylvania's member on the Ohio River Valley Water Sanitation Commission, succeeding State Representative **Herbert P. Sorg. . . L. H. Ress,** formerly design engineer of the state engineer's office of Nebraska, has been made deputy state engineer, a newly-created post. His place was taken by **Waldo H. Mangel. . .** A new department consolidating under a single authority the existing city departments of streets, sanitation, parks, plumbing, electrical and building inspection and the sewage disposal system, has been created in Sheboygan, Wis., **Robert E. Fleischer,** resigned as county highway commissioner and will direct the new department. . . **Lacy H. Smith,** chief construction analyst for loan guaranty division of the Veterans Administration's Washington Regional office, has been promoted to chief of the appraisal section, succeeding **Stephen R. Baker,** who was transferred to the Navy Department. . . Appointed chairman of the labor committee of the National Constructors Association was **L. T. Gardiner** of the Fluor Corp., Ltd., Los Angeles, Calif.

Leon W. Urbain, a structural engineer of Chicago, has joined the firm of Consoer, Townsend & Associates of the same city to head their industrial plant division. . . The addition of **Gilbert H. Dunstan** to the staff of the State College of Washington has been announced. He will be professor of Sanitary Engineering in charge of teaching and research. . . **Thomas G. Mohler** will be chief engineer of the newly created District 7 of the Maryland State Roads Commission. . . **Brig. Gen. O. E. Walsh,** North Pacific division engineer, was assigned to the new Mediterranean division, Corps of Engineers.

• **Elected**—**William F. Nelson** of Washington, D. C., has been elected president of the Mason Contractors' Association of America at its convention held in Chicago. . . At the recent national convention of the National Sand and Gravel Association, **Albert R. Shiely,** of St. Paul, Minn., was made president succeeding **H. N. Snyder,** Buffalo, N. Y. **Richard K. Humphries,** San Francisco, was elected president of the National Ready Mixed Concrete Association, succeeding **N. J. Fredericks,** Detroit. . . The election of **Franklin L. Johnston** as vice-president and member of the board of directors, and **Thomas A. Currie, Jr.,** as vice-president and construction manager of United Engineers & Constructors Inc., Philadelphia, Pa., has been announced by the president of the firm, **Col. Edwin M. Chance.**

• **Honored**—Lt. Col. **Charles S. Tucker,** Delaware area engineer for the Army Engineers, has been presented with the Legion of Merit award by **Col. R. E. Cruse,** district engineer for the Philadelphia district of the Army Engineers.

• **Resigned**—**Joseph W. Hamilton,** Asotin County engineer at Asotin, Wash., for the past two years, has resigned to take a long vacation.

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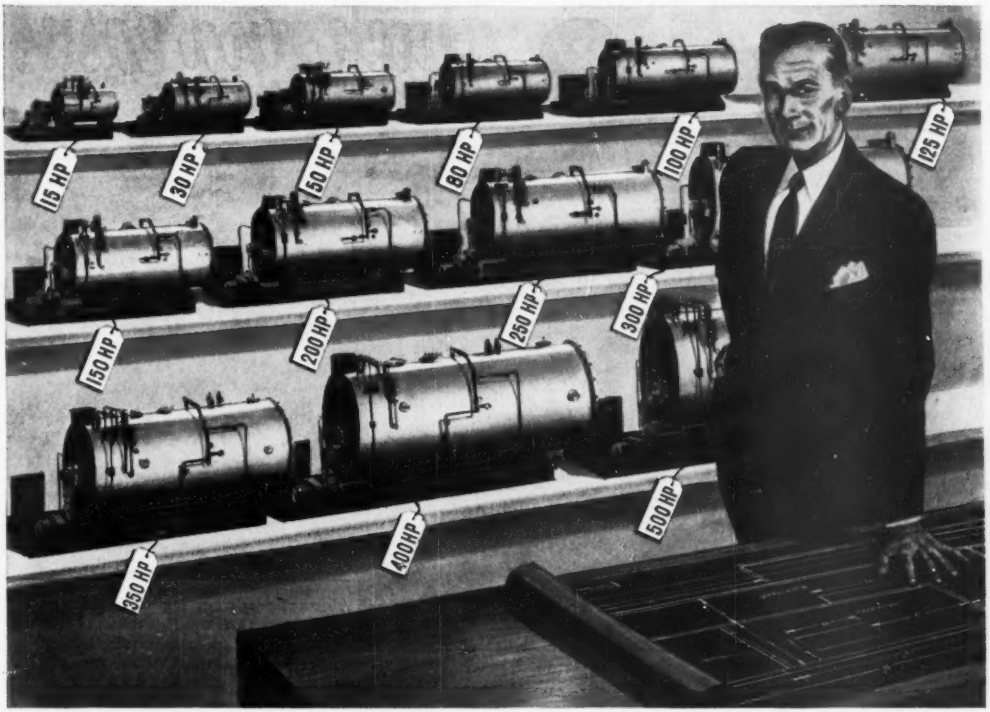

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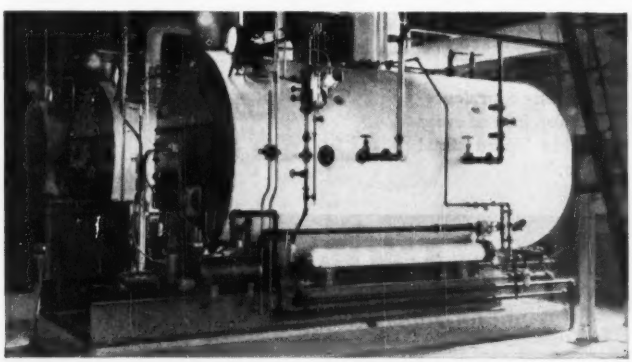

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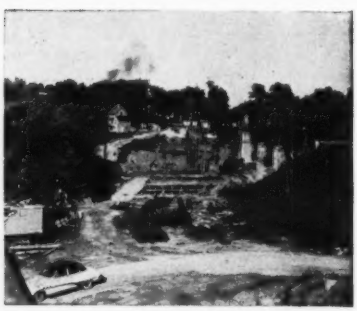

Overall view of foundation work for new bridge showing storage yard, pile assembly rack at left, and driving operation in background.

UNION METAL

Monotube Foundation Piles

More contractors but fewer engineers seen for Mississippi Valley road work

Engineering manpower shortage threatens to be the biggest single bottleneck in this year's highway program in the upper Mississippi River valley. This sobering prediction highlighted the 43rd annual meeting of the Mississippi Valley Conference of State Highway Departments held in Chicago Mar 6-8.

Lawrence S. Tuttle, assistant to the commissioner, Bureau of Public Roads, summed up the situation when he told the 307 registrants at the 3-day meeting that "the shortage of engineering manpower today is far more important than any shortage of materials."

Mr. Tuttle backed up his statement with some cold statistics. "The Engineering Manpower Commission of the Engineers Joint Council," said he, "estimates a present deficit of 60,000 engineers and an annual demand of 30,000 engineers for all types for the next 10 years. The supply of engineers is not expected to equal the demand until 1965.

• **What should be done**—Far from being hopeless, however, declared Tuttle, the engineering manpower situation can be improved by adopting the following policies:

"An adequate salary scale all the way up and down the line; particularly for top engineers and administrators in key positions. A personnel agency with adequate powers, staff and appropriations. Admission to the service by proper competitive tests; promotion based solely on merit and fitness; in-service training; a proper classification plan based on work performed; minimum and maximum salaries for each grade; service records as a basis for promotions; good working conditions, uniform hours of work, vacation and sick leave privileges; and a financially sound retirement system."

• **Ample contractor capacity**—Highway contractors have ample capacity for executing a much larger roadbuilding program this year than last. This assurance, by A. N. Carter, manager of the Associated General Contractors' Highway Division, was based on a recent 30-state survey by AGC.

All 30 states reported that their contractors have the capacity to perform at least 30% more highway construction than was completed the previous year.

• **What states should do**—While assuring the highway engineers that they need not fear any lack of contractor capacity, Carter pointed out several procedures whereby the highway departments can speed up construction. Briefly, they are:

Permit freer use of new types of equipment; cut hand labor to a minimum; use local construction materials to a maximum; award contracts of various sizes; adopt more standardization of design both within the state and with neighboring states; set up a balanced construction program each year; and make construction seasons as long as possible.

One of the most important points, declared Carter, is for the highway department to be sure that land is available and the job is ready for the contractor to move in and start work when bids are opened.

• **Current trends**—Several significant trends in Mississippi Valley highway construction were brought out in the individual states' reports to the conference. A few examples:

Illinois faces an unprecedented shortage of engineers for this year's construction program . . . In Indiana, the emphasis this year will be on new bridges, grade separations and new highway construction; with rehabilitation of old pavements being only about two thirds of last year's program . . . Iowa also is losing a number of engineers to industry, which will work a special hardship on field inspection and maintenance crews . . . Kansas is fast approaching the need for more extensive thruway construction . . . Kentucky intends to do more highway maintenance by contract, which was adopted on a sizable scale for the first time last year . . . Minnesota hopes to complete several big bridges this year which were delayed on account of the scarcity of superstructure structural steel.

• **New Officers**—At the close of the three-day conference G. H. Bittle, chief engineer, Oklahoma State Highway Department, was elected president, succeeding P. H. Daniells, assistant chief engineer, Missouri State Highway Department. H. L. Aitken, state engineer, Department of Roads and Irrigation, Nebraska, was elected secretary.

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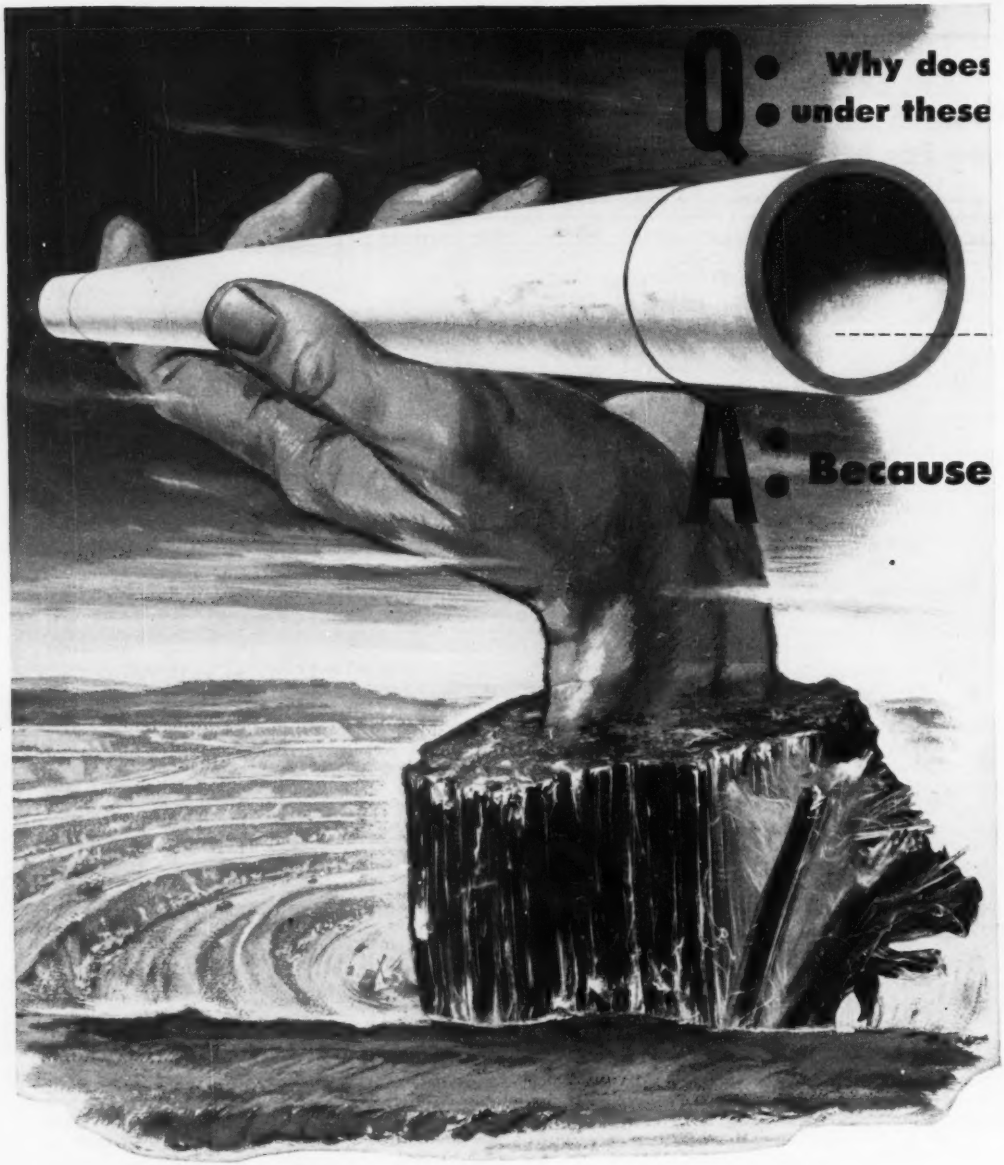

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Transite Pipe was first installed in this West Virginia city in 1935. In addition to heavy street traffic, it has withstood soil conditions so destructive that the pipe previously used had a service life of only two to three years. When the Transite main was recently uncovered to insert a tap into the line, the pipe was found in as good condition as the day it was laid!

it's reinforced with ASBESTOS for lasting strength

THERE IS GOOD REASON why Transite* Pressure Pipe—shown in the city street above—has already far exceeded engineers' expectations for the service life of pipe used here:

It's reinforced with tough, strong, indestructible fibers of asbestos—*the mineral that defies time!*

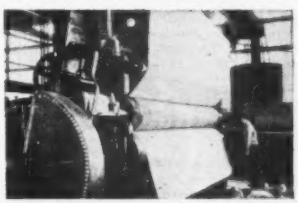
Countless numbers of these remarkably strong asbestos fibers—their tensile strength is comparable to that of steel—are dispersed uniformly throughout every length of Transite Pressure Pipe. This reinforced structure not only contributes to the *initial* strength needed in a pipe designed for use under busy city streets. Equally important, it helps assure the *lasting* strength that enables Transite Pipe to survive continued corrosive attack, year after year . . . to *stay* strong in service under conditions that are highly adverse to ordinary pipe materials.

This quality of lasting strength is one of many important advantages of a pipe engineered with modern water transportation requirements in mind. Transite's Simplex Couplings reduce waterline leakage losses to a minimum, provide flexibility to help relieve the line of soil stresses and traffic loads. Its light weight makes for easier handling and effects substantial savings during installation. Its smooth interior assures a high coefficient of flow (C=140) and, because Transite can never tuberculate, helps keep pumping costs low through the years.

To find out more about how this modern asbestos-cement pipe can help solve your waterline problems and save you money, write Johns-Manville, Box 60, New York 16, N. Y.

JOHNS-MANVILLE PRODUCTS

This photomicrograph shows how the tough, strong asbestos fibers are distributed uniformly throughout the structure of the pipe.



On machines like this, the asbestos-cement-silica mixture is "built up" under heavy pressure into a dense, homogeneous pipe structure.

Transite's flexible Simplex Couplings help relieve the line of excessive flexural stresses—an added safeguard against pipe failures.

asbestos-cement PRESSURE PIPE

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Falmouth**—TRANSMITTER AND RECEIVER BLDG.—B.A. 3/25—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, transmitter and receiver bldg., Otis Air Force Base, Eng. 19-016-52-17. Extended date. CD 12/4.

Mass., Worcester—ADMINISTRATION BLDG.—B.A. 4/1—City, Municipal Airport Comn., administration bldg., control tower. $400,000. Cornelius W. Buckley, 311 Main St., archt. CD 10/3.

† **Massachusetts**—B.A. About 4/1—U. S. Eng., 80 Lafayette St., New York 13, N. Y., channel imprvs., Junction Reach, North Adams. $328,000. CD 4/27/44, under Mass., North Adams.

† **Massachusetts**—B.A. About 4/1—U. S. Eng., 80 Lafayette St., New York, N. Y., channel imprvs., Junction Reach, North Adams. CD 2/6.

† **Maine**—PIPE LINE—B.A. 4/2—U. S. Dpt. Interior, Fish & Wildlife Service, 59 Temple Pl., Boston 11, Mass., installation pipe line at U. S. Fish Culutural Station, Craig Brook, Bids No. FWS-1809.

BIDS ASKED—BUILDINGS

Conn., Danbury—SCHOOL—B.A. 3/25—Town c/o Bd. of Educ. g. school, Roberts Ave. Plans deposit $30. CD 3/23/51.

† **R. I., Davisville**—BUILDINGS—B.A. 3/25—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., prefabricated rigid frame building, U. S. Naval Construction Battalion Center, NOY 70941, Spec. 32435. Plans deposit $10. CD 9/13.

Mass., Holden—HOSPITAL—B.A. 3/28—Holden District Hospital, Inc., Boyden Rd., hospital addn. Plans deposit $50. CD 9/22/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
J. F. Fitzgerald Constr. Co., 212 Essex St., Boston, Mass. LB **$2,514,901**, est. $2,220,000. hy. and bridge, Raynham-Bridgewater and West Bridgewater. Bids Mar. 4. CD 2/13.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
White Oak Excavators, Inc., 59 E. Main St., Plainville, Conn. LB **$1,262,913**, est. $1,500,000. state hy. relocation, Rte. 20, Chicopee and Ludlow. Bids Mar. 4. CD 2/28.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Geo. A. Fuller Co.**, 11 Beacon St., Boston, Mass. CA **$1,500,000.** NURSES HOME, BOSTON, MASS. Massachusetts General Hospital, Fruit St., Boston, Mass. Bids Feb. 27. CD 2/11.

▲ **Bossi Constr., Inc.**, 43 Leon St., Boston, Mass. LB **$1,552,841.** HIGH SCHOOL, Pleasant St., METHUEN, MASS. Town, Wm. H. Keller, exc chn., H. S. Bldg. Comn., Methuen, Mass. Bids Feb. 29. CD 1/21.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., Mineola—B.A. 3/26—Nassau County Bridge Auth., Old County Court House, Franklin Ave., constr. Seagirt Blvd. extension, Beach 9 St. to Beach 35 St., Far Rockaway, Queens Co. Plans deposit $15. Hardesty & Hanover, 101 Park Ave., New York, consult. engrs.

N. Y., Sidney—BARRACKS—B.A. 3/26—Bureau Contracts & Accounts, Albany, barracks at State Police Barracks, $723,000. Plans deposit $30. CD 2/15/46.

† **Pa., Phila.**—OIL STORAGE—B.A. 4/3—U. S. Eng., 121 N. Broad St., Phila., Zone 1, addnl. oil storage facilities near boiler house at Frankford Arsenal and near Bldg. 301 at Tacony Warehouse, Inv. No. ENG 36-109-52-224.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Frank Mashuda Co., Gibsonia, Pa. CA **$1,632,647.** constr. 28,036 ft. divided hy., c. conc. pavement 22 ft. wide on east side of divisor, and rein.-con. bridge T.R. 19, Butler Co. Bids Feb. 21, awarded Mar. 4. CD 2/27, under LB.

BIDS ASKED—BUILDINGS

N. J., Paramus—HOSPITAL—B.A. 3/24—Bd. Freeholders Bergen Co., Administration Bldg., Hackensack, Laundry Bldg. alterations at Bergen Pines County Hospital. CD 1/23/47.

† **Md., Aberdeen Proving Ground**—INTERIOR BALLISTIC LABORATORY—B.A. 3/26—U. S. Eng., 24 St. and Maryland Ave., P.O. Box 1715, Baltimore, Zone 3, interior ballistic laboratory, Eng. 18-020-52-37. CD 2/27.

† **Md., Patuxent River**—BUILDINGS—B.A. 3/26—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., two 1 story, brick buildings, prefabricated type steel building, incl. plumbing, heating, ventilating and air conditioning, NOY 70603, Spec. 32192. Plans deposit $10.

Pa., Embreeville—PATIENTS—B.A. 3/26—General State Auth., 18 and Herr Sts., Harrisburg, revamp present patients' bldg. at Embreeville State Hospital. $400,000. Plans deposit $10. Baader, Young & Schultze, 1500 Walnut Street Bldg., Phila., Zone 2, archts., A. F. Jones, c/o owner, ch. engr.

Pa., Clearfield—SCHOOL—B.A. 3/27—Pub. School Bldg. Auth., 101 S. 25 St., Harrisburg, Secondary School for Harmony Joint School Dist., Burnside Twp. Plans deposit $25. Hunter, Caldwell & Campbell, P.O. Box 911, Altoona, archts.

Pa., Plymouth Meeting—SCHOOL—B.A. 4/3—Pub. School Bldg., Auth., 101 S. 25 St., Harrisburg, high school for Plymouth-Whitemarsh Joint School Bd. Plans deposit $50. Davis, Dunlap & Carver, 1717 Sansom St., Phila., Zone 3, archts. CD 2/1.

Pa., Fayette Twp. (THOMPSONTOWN P. O.)—SCHOOL—B.A. 3/27—State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, secondary school bldg. for East Juniata Joint School Dist. Plans deposit $30. Edmund G. Good, Jr., 904 N. 2nd St., Harrisburg, archts. CD 7/6, under LB.

Pa., Beaver Falls—HOUSING—B.A. 3/31—Beaver Co. Housing Auth., Beaver, 5 or 6 story brick multiple apartments, Proj. 38. $450,000. Frank Dickerson, 1902 7th Ave., archt.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Aldon Constr. Co.**, 15 and H Sts. N. W., Wash., D. C. Owner Builds. CA **$2,775,000.** 185 HOUSES, Browns Lane, BETHESDA, MD. E. W. Dreyfuss, 1919 15 St. N. W., Wash., D. C., archt.

Elias Nadelman, 6631 Western Ave. N. W., Wash., D. C. CA **$600,000.** 43 RESIDENCES, SILVER SPRING, MD. Northwood Park Housing, Inc., Mrs. C. Katkow, secy., 21 Kennedy St., N. W., Wash., D. C. Warren Shoemaker, 4801 Wisconsin Ave. N. W., Wash., D. C., archt.

Dreisen-Freedman, Inc., 8632 Colesville Rd., Silver Spring Md., Owner Builds, **$550,000**, nine 12 families each 3 story, bsmnt. APARTMENTS, Brandywine St. S. E. WASH., D. C. E. W. Dreyfuss, 1919 15 St. N. W., Wash., D. C., archt.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **La., Lake Charles**—HANGAR—B. A. 3/25—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., hangar, Lake Charles Air Force Base, Eng. 41-243-52-6. CD 3/28.

† **Va., Norfolk**—B. A. 3/25—Pub. Wks. Office, Fifth Naval Dist., U. S. Navval Base, Zone 11, ballast water disposal plant at the U. S. Naval Base (Craney Island Fuel Facility). NOY 71045, Spec. 32832. Plans deposit $10.

† **Va., Norfolk**—PARKING FACILITIES—B. A. 3/25—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, parking facilities in Unit-X, U. S. Naval Base, NOY 71039. Spec. 32826. Plans deposit $10.

† **S. C., Charleston**—B.A. 3/25—Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, paving roads and walks, Naval Ammunition Depot, NOY 70673, Spec. 31176. Plans deposit $10.

† **Va., Fort Belvoir**—B.A. 3/26—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., water mains, Engineering Proving Grounds, Eng. 49-080-52-62-(52).

Va., Portsmouth—B. A. 3/26—I. G. Vass, City Mgr. Municipal Bldg., Div. Ea, trunk sewers, suction mains, incl. 21,000 ft. 8- to 18-in. vitr. clay sewer, 7,000 ft. 14- and 16-in. c.l. suction main, 4,000 ft. 24-in. rein.-con. force main; Div. Eb, 23x38 ft. brick Clifford Street Pumping Station; Div. Ec pumping equip., incl. one 1,250 g.p.m. and two 2,750 g.p.m. electric motor driven pumps. Plans deposit $20. Greeley & Hansen, 220 S. State St., Chicago 4, Ill., engrs. CD 12/12/46.

Miss., Pascagoula—B. A. 3/26—City, City Hall, (1) sanitary sewer imprvs., (2) street imprvs. Plans deposit $10 each. D. E. Simmons, P. O. Box 217, engr. CD 8/16, under Streets and Roads.

† **Fla., Jacksonville**—DREDGING—B.A. 3/27—Sixth Naval Dist., Charleston, S. C., dredging at Catapult Pier, U. S. Naval Air Station, NOY 29467, Spec. 31129. Plans deposit $10. CD 2/26/50.

† **La., Lake Charles**—GROUP BUILDING—B.A. 3/27—U. S. Eng., 606 Santa Fe Bldg., Galveston, 17,500 sq. ft. air base group bldg., incl. bit. paved parking area, Lake Charles Air Force Base, Eng. 41-243-52-42. CD 9/20.

S. C., McCormick—B. A. 3/27—Town, water filtration plant addns. $50,000. Plans deposit $20. Harwood Beebe Co., Montgomery Bldg., Spartanburg, engr.

† **Miss., Greenwood**—B.A. 3/27—U. S. Eng., Greenwood, constr. Lee and Wilson Sts. Pumping Stations, Inv. 52-139.

Va., Chatham—B.A. 3/28—Town, Town Hall, construct 2/3 m.g.d. water filtration plant, J. S. Carter, city engr., William B. Sours & Assoc., Courthouse Bldg., Hampton, engrs. CD 1/16.

† **Ga., Marietta**—TECHNICAL—B.A. 3/28—U. S. Eng., Post Office Bldg., Savannah, technical and academic bldgs. at Dobbin Air Force Base, Eng 09-133-52-68. Plans deposit $10.

† **Ga., Valdesta**—HOUSING UNITS—B.A. 3/28—U. S. Eng., Post Office Bldg., Savannah, 5 units of family housing, Moody Air Force Base, Eng 09-133-52-73. Plans deposit $10.

Fla., Vero Beach—B.A. 3/31—City, filling various land lots of marsh land. Approx. $100,000.

Ala., Anniston—RUNWAY—B.A. 4/1—City, runway at municipal airport, $95,000. Polk, Powell & Hendon, Stallings Bldg., Birmingham, engrs.

† **Ala., Salem**—RUNWAY EXTENS.—B.A. 4/1—U.S. Eng., P. O. Box 1169, Mobile, Zone 7, runway extensions, Craig Air Force Base, Inv. 52-16. CD 7/18.

La., Pineville—B.A. 4/1—City, sanitary sewer imprvs. Plans deposit $5. Howard L'Heureux & E. F. Harris, 720 Murray St., Alexandria, engrs. CD 7/26/45.

† **Tenn., Murfreesboro**—ELEVATOR—B.A. 4/1—Veterans Admin., Munitions Bldg., Wash., D. C., installing elevator, Bldg. 7 for Veterans Admin. Hospital, Spec. 5205, Proj. No. 41-5146.

BIDS ASKED—BUILDINGS

Ky., Fort Thomas—HOSPITAL—B.A. 3/26—Campbell County Hospital, St. Thomas, hospital, Potter-Tyler-Martin & Roth, 128 E. 6 St., Cincinnati, O., archts. CD 10/13/49.

N. C., Kinston—HOSPITAL—B.A. 3/27—Lenoir Co., 56-bed hospital addn. $450,000. Plans deposit $50, J. N. Pease & Co., 119½ E. 5 St., Charlotte, N. C., archts. CD 3/28/51.

Ala., Montgomery—HOUSING—B.A. 3/27—Montgomery Housing Auth., 130 Bell St., 390 unit housing, Project, ALA 6-6. Plans deposit $50.

Va., Norfolk—SCHOOLS—B.A. 3/27—Norfolk Co. School Bd., Norfolk, Norview High School; Cradock High School. Plans deposit $75 each. J. Binford Walford-O. Pendleton Wright, 103 E. Cary St., Richmond, archts.

Va., Oceana—HOUSING—B.A. 3/27—Pub. Wks. Officer, Fifth Naval Dist., Naval Base, Norfolk, Zone 11, construct, manage, finance housing at Naval Auxiliary Air Station, Bernard B. Spigel, Dickson Bldg., Norfolk, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Lewis & Bowman, Inc.**, Edwards Bldg., Goldsboro, N. C. CA **$1,023,823.** Third Sect., Maysville Floodwall, CIVENG 46-022-52-49, KENTUCKY. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Feb. 28. CD 2/1.

▲† **McAlister-Davis Co.**, 833 State St., Pine Bluff, Ark., LB **$1,746,500.** construct Mississippi River revetments, grading, paving banks, etc., Civeng 40-041-52-60B, TENNESSEE. U. S. Eng., P.O. Box 97, Memphis, Tenn. Bids Mar. 6. CD 2/7.

▲† **Westinghouse Electric Corp.**, Union Bank Bldg., Pittsburgh, Pa., CA, **$2,276,512**, furnishing, installing two 44,444 kva and one 6,667 kva generators for powerhouse of Buford Dam, Buford, GEORGIA. U. S. Eng., P.O. Box 1169, Mobile, 7, Ala.

FLORIDA—State Hy. Dpt., Tallahassee, Fla.,
Coggins & Deermont, Chipley, Fla., LB, **$311,579** grading, paving on State Rd. 167 between the intersection of State Rds. 75 and 167 and point approx. 12.9 mi. north S-315 (2) Bay Calhoun and Jackson Counties; LB, $138,513, grading, paving on State Rd. S-273 from State Rd. 77 in Chipley N.E. to Jackson Co. line and from point approx. 015 mi. N. W. of Alligator Creek S.W. and east approx. 1.21 mi. to point in Chipley, 6156-150-151, Washington Co.

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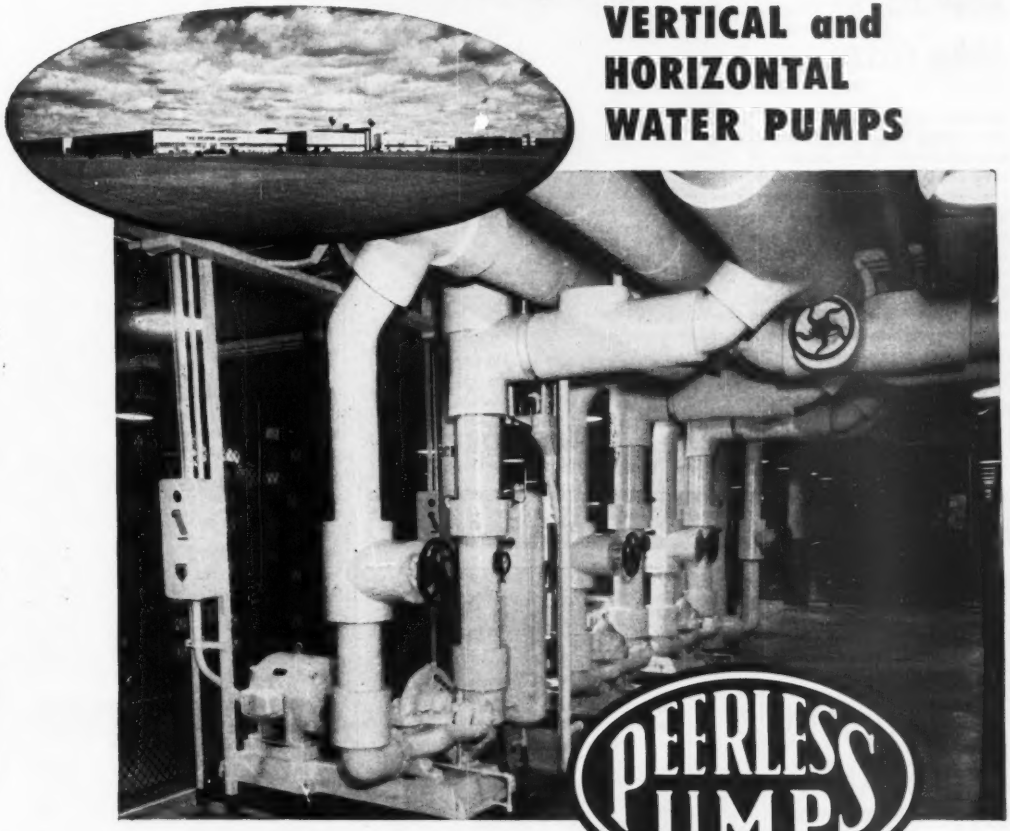

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Inset Photo: Exterior of The Upjohn Company's new pharmaceutical plant near Kalamazoo, Michigan. Total refrigeration load for air-conditioning systems is 4,000 tons. Raw water is supplied at 54°F from deep wells by Peerless vertical turbine pumps.

Large Photo: One of several banks of 3 Peerless Type A pumps which deliver water to refrigeration compressors, as well as to roof sprays and cooling coils. Others handle circulation to hot water converters for heating in winter time. Peerless has furnished a total of 52 pumps in The Upjohn Company's plant.

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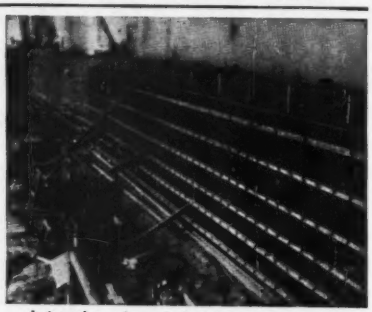

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Jas. H. Craggs Constr. Co., Ocala, Fla., LB, **$197,199,** grading, paving on State Rd. 200 in Starke on Temple Ave. from Call St. N.E. approx. 0.817 mi. 28010-112, Bradford Co.

Smith Engr. & Constr. Co., W. Pensacola St., Pensacola, Fla., LB, **$288,629,** grading, paving, drainage structures on State Road 30-A from State Rd. 30 S.E. approx. 14.734 mi. to point near St. Andrews Bay on State Rd. 30 4616-102, Bay Co.

Cone Bros. Constr. Co., Ceser and Cumberland Rds., Tampa, Fla., LB, **$614,710,** roadway, embankment, one concrete box culvert and drainage structures on State Rd. 60 between point approx. 0.5 mi. east of State Rd. 45 and point approx. 21 mi. east of State Rd. 45, F 033-1(6), Hillsborough Co.

Hooper Constr. Co., Coral Gables, Fla., LB, **$698,356** grading, paving one bridge on State Rd. S-19 between SR 40 near Marion-Lake Co. line and SR 314 south of Salt Springs FH-15-A, Marion Co.

Troup Bros. Inc., 251 S. Dixie Highway, Miami, Fla., LB, **$648,388,** grading, paving and ext. to 3 concrete box culverts on State Rd. 5 between Perine and Goulds, F 003-2(2) Dade Co.

A. F. Rich Co., Monroe and Pershing Sts., Tallahassee, Fla., OB, **$487,362** mi. reworking widn., and resurf. on State Rt. 55 between Pasco Co. lien and poin approx. 10 mi. north 0808-197, Hernando Co.

Faulk & Coleman Constr. Co., 4 Points Woodville Hy., Tallahassee, Fla., LB, **$80,595,** grading, paving on State Road S-260 from point on State Rd. 20 approx. 10 miles west of Tallahassee to Silver Lake Camp, 5561-101, Leon Co.

Geo. G. Tapper Co., Inc., Port St. Joe, Fla., LB, **$114,359** grading, paving, bridge on State Rd. S-85-A from State Rd. 189 at Garnier N. E. approx. 3.843 mi. 5758-150 Okaloosa Co. Bids Feb. 26. CD 2/20.

† **Paul Smith Constr. Co.,** 310 N. Rome Ave., Tampa, Fla., LB, **$531,091,** airmen's quarters and combination mess and administration bldgs. at Auxiliary Field No. 3, Inv. 52-29, EGLIN AIR FORCE BASE, FLA. U. S. Eng., P.O. Box 1169, Mobile, 7, Ala. Bids Feb. 28. CD 2/1.

BUILDINGS

LOW BIDS AND CONTRACTS

H. Dlugach & Son Co., 632 Falls Bldg., Memphis, Tenn., Owner Builds. Approx. **$500,000.** 70 RESIDENCES, N. Graham and Graham Circle, MEMPHIS, TENN.

W. D. Jemison & Sons, 1352 Madison Ave., Memphis, Tenn., Owner Builds. Approx. **$750,000.** 71 RESIDENCES, addn. to Colonial Acres sub-division, MEMPHIS, TENN.

Julius Buxbaum & Stanley Waranch, 510 W. Sewells Pt. Rd., Norfolk, Va., Owner Builds. Approx. **$600,000.** 42 RESIDENCES, NORFOLK, VA.

▲ **V & M Homes,** 1089 Galloway St., Memphis, Tenn., CA, **$4,000,000,** 400 HOUSING UNITS, HUNTSVILLE, ALA. Red Stone Homes, c/o contractor.

R. F. Farnsworth & Co., Inc., 1515 S. Salcedo St., New Orleans, La. LB **$887,086.** 2 story, brick, Steel McDonogh No. 36 Uptown Elementary SCHOOL, NEW ORLEANS, LA. Orleans Parish School Bd., 703 Carondelet St., New Orleans, La. Bids Mar. 4. CD 1/29.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Illinois**—B.A. 3/24—U. S. Eng., 834 U. S. Court House & Custom House, 1114 Market St., St. Louis, 1, Mo., enlarging 23,650 lin. ft. earthen levee and extens. 3 drainage structures, Invol. 695,000 cu. yd. earth, in Columbia Drainage and Levee Dist. Proj. Item IV-C, Monroe Co., Inv. CIVENG 23-05-52-74. Extended date. CD 1/30.

† **Illinois**—B.A. 3/25—U. S. Eng., 834 U. S. Court House & Custom House, St. Louis, 1, Mo., levees Columbia Drainage and Levee Dist., Project 1 Item IV-C, Monroe Co., on north bank of Fountain Creek Mississippi River opposite approx. mile 156 above mouth of Ohio River, Inv. No. CIVENG 23-065-52-74. Extended date. CD 2/27.

Mich., Saginaw—B.A. 3/25—City, R. A. Benway, purch. agt., C-400, 94,350 sq. yd. 6-to 8-in. c. conc. pavement. Plans deposit $5 refundable. CD 2/15.

† **Mich., Selfridge Air Force Base** — LOCOMOTIVE SHELTER—B.A. 3/25—U. S. Eng., 1900 Cadillac Tower, Detroit, locomotive shelter, appurtenant, Selfridge Air Force Base. CD 7/3/51.

† **O., Columbus**—RAILROAD—B.A. About 3/25—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., railroad to new warehouse facilities, at Lockbourne Air Force Base, Serial No. ENG 46-022-52-107.

Ind., Indianapolis—B.A. 3/27—Bd. Comrs. Marion Co., Court House, sewage treatment plant Julietta County Home, near here, $70,000. H. W. Steeg & Assocs., 2331 N. Meridian St., Zone 4, engrs.

† **Ind., Vincennes**—B.A. 3/27—U. S. Eng., 830 West Broadway, Louisville 3, Ky., flood protection works, Section A, Part 1, Serial No. CIVENG 15-029-52-72. Plans deposit $15.

† **Mich., Oscoda**—CRASH BOAT DOCK—B.A. 3/27—U. S. Eng., 1900 Cadillac Tower, Detroit, reconstr. crash boat dock incl. piling, rip rap, on Au Sable River, Oscoda Air Force Base, CD 6/28/51.

† **O., Columbus**—ROADS and DRAINS—B.A. On or About 3/28—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., construct roads and drains at Lockbourne Air Force Base, ENG 46-022-52-95. Extended date. CD 1/3.

BIDS ASKED—BUILDINGS

Wis., Hudson—SCHOOL—B.A. 3/25—Bd. Educ., 3 story, rein.-con., brick, stone high school addn. $450,000. Plans deposit $20. Parkinson & Dockendorff, La Crosse, archts. CD 4/18/51.

Mich., Nashville—SCHOOL—B.A. 3/27—Bd. Educ., G. E. Montgomery, secy, brick, masonry two wing addns. to W. K. Kellogg Elementary School. Over $300,000. Plans deposit $25. Warren S. Holmes Co., 2200 Olds Tower, Lansing, archt.

† **Ind., Newport**—BUILDINGS, etc.—B.A. About 3/28—U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill., 1 story frame buildings, roads, parking lots, addns. to existing frame bldgs. and rehabilitation existing railroad roadbed and related facilities at Wabash River Ordnance Plant. CD 10/26/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

WISCONSIN—State Hy. Dpt., Madison,
Koch Constr. Co. & Al. J. Koch, 239 W. Center St., Milwaukee, 12, Wis., CA, **$672,045**. c. conc. 9.789 mi. Contr. 1, Old U.S.H. 41-North County Line Rd., S.T.H. 23-North County Line Section, U.S.Hy. 41, Proj. F 03-1 (41) Fond du Lac Co.;
Bushman Constr. Co., 4638 J. C. Nichols Parkway, Kansas City, 2, Mo., CA, **$604,181**, Contr. 1, c. conc. 7.497 mi. U.S.H.51-Emerald Grove Rd., U.S.Hy. 14, F 014-2 (13), Rock Co. Bids Feb. 19. CD 2/2, under LB.

WISCONSIN—State Hy. Comn., Madison,
The Druml Co. & Speedway Contg. Co., 1335 North Third St., Milwaukee, 12, Wis., CA, **$700,405**, Contr. 1, grading and four structure 0.013 mi. 44th Street Expressway, South Stadium Vehicular Underpass, Proj. U-5726 (3), Milwaukee Co. Bids Feb. 29. CD 3/5, under LB.
▲ **Edward H. Meyer, Constr. Co., Inc.**, P. O. Box 705, Hy. 41, Neenah, Wis. CA **$1,469,069**. constr. airfield buildings. Bids Feb. 12. CD 1/14.
▲ **C. A. Hooper Co.**, 453 W. Gilman St., Madison 3, Wis. CA **$750,598**. power plant, steam distr. sys., Eng. 2-064-52-38. Kinross Air Force Auxiliary Field, KINROSS, MICH. U. S. Eng., 1900 Cadillac Tower, Detroit 26, Mich. CD 2/14 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Glenn North Constr. Co., 701 N. 9 St., Terre Haute, Ind., CA, **$531,597**, general construction 1 and 2 story, 54x139 ft., 62x102 ft., brick, stone rein.-con. HOSPITAL addn. and remodeling, TERRE HAUTE, IND. St. Anthony's Hospital, Poor Sisters of St. Francis 1021 S. 6 St., Terre Haute, Ind. CD 1/17.
▲ **M. H. Wolfe & Son**, 20 and Adams Sts., Granite City, Ill., LB, **$1,061,309**, 2 story, 62x130 ft., 90x36 ft., and 36x28 ft., and 1 story, 96x124 ft. 47x27 ft., Community High SCHOOL addns., ROXANA, IL.. Roxana Unit School Dist. 1, High School, Chaffer and Tydeman Aves., Roxana, Ill. Bids Feb. 28. CD 2/8.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **South Dakota**—B.A. 3/27—U. S. Eng., 1709 Jackson St., Omaha, Neb., cutoff of surface flow from wells at Fort Randall Reservoir Proj., near Lake Andes. Inv. 52-83. CD 5/25/44.

† **Tex., Kingsville**—AIRFIELD PAVING, etc.—B.A. 3/27—U. S. Dpt. Navy, Naval Air Station, Corpus Christi, asdnl. airfield paving, incl. runway, taxiway aprons, gunnery and ordnance areas, Naval Auxiliary Air Station, NOY 72197. $400,000. Plans deposit $50. CD 7/12.

† **Texas**—B.A. 3/27—U. S. Eng., 606 Santa Fe Bldg., Galveston, dredging Houston Ship Channel, Shell Refinery to Hunting Bayou, Inv. No. CIVENG 41-243-52-65. $850,000. CD 6/9/44.

† **S. D., Chamberlain**—B.A. 3/28—U. S. Eng., 1709 Jackson St., Omaha, Neb., Chamberlain sewer relocation, Inv. 52-89.

† **Montana**—CONTROL HOUSE, ETC.—B.A. 3/28—Bonneville Power Admin., 827 N.E. Oregon St., Portland, Ore., Inv. 6349, Anaconda control house and oil-pump house. Plans deposit $25. L. C. Stewart, co owner, engr.

† **Tex., Fort Hood**—B.A. 3/28—U. S. Govt. c/o Post Engr. Fort Hood, replacement steel water lines with c.i. pipe, Serial No. E 41-093-52-30. $35,000.

Neb., Omaha—B.A. 3/31—Douglas Co., Omaha, surf. 7¾ mi. Rd. 49, Rockbrook Rd. and 72 St. $135,000. Wm. Green, Omaha, engr. CD 2/18.

† **Okla., Oklahoma City**—RAILROAD FACILITIES—B.A. 4/1—U. S. Eng., Box 61, Tulsa 2, construct railroad facilities, Areas "A" and "B", Tinker Air Force Base, Inv. No. Eng 34-066-52-20. Approx. $250,000. CD 2/28.

† **South Dakota**—B.A. 4/1—U. S. Eng., 1709 Jackson St., Omaha, Neb., earthwork, Stage I, Gavins Point Reservoir, near Yankton. Proj. Inv. 52-91. CD 3/3.

BIDS ASKED—BUILDINGS

Minn., St. Cloud—HOSPITAL, etc.—B.A. 3/26—Mother Richarda, Sisters of the Order of St. Benedict, St. Benedict's Convent, St. Joseph, hospital and nurses home, addns., alterations. $300,000. Plans deposit $25, Thorshov & Cerny, 400 Metropolitan Life Bldg., Minneapolis, archts.

Colo., Pueblo—SCHOOL—B.A. 3/26—School Dist. 60, Ernest M. Hanson, supt., 119 Colorado Ave., South

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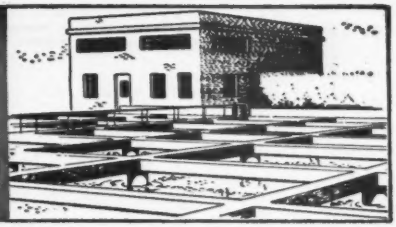

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THE HAYWARD CO., 49-59 Church St., N. Y.

Side Junior High School, rein.-con., 425 ft. E. & W. by 272 ft. N. & S. 2 story classroom wing, balance is 1 story. Approx. $300,000. Edward L. Bunts, 21 E. Monument St., Colorado Springs, engr. and archt. CD 4/24.

† **Kan., Fort Riley**—AMMUNITIONS STORAGE MAGAZINE—B.A. 3/27—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., ammunitions storage magazine, Eng. 23-0280 52-46. CD 7/2.

Minn., North St. Paul (Br. St. Paul)—SCHOOL—B.A. 3/27—Bd. Educ., Independent School Dist. No. 2, Ramsey Co., Dist. R 2 of Washington Co., R. E. Engwer, clk., 1 story, 58x250 ft. grade school, $400,000. Plans deposit $25. E. D. Corwin, E. 818 First National Bank Bldg., St. Paul, archt. CD 2/6.

† **N. M., Albuquerque**—GUARD HOUSE—B.A. About 4/1—U. S. Eng., P. O. Box 1538, 2108 E. Central Ave., remodel guard house and construct 16x77 ft and 36x85 ft. L-shaped addn. to existing guard house and 2 guard towers, masonry constr. Sandia Base, Serial No. Eng 29-005-52-45. Plans deposit $75.

Tex., Dallas—HOUSING—Bids Asked—Pub. Wks. Officer, 8th Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans, La. construct, manage, finance, 129-unit Wherry Housing Proj. $967,500. CD 12/6/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Arkansas Power & Light Co., Simmons National Bldg., Pine Bluff, Ark., Owner Builds, **$588,000.** 44 mi. 115kv transmission line from Little Rock to Blakely Mountain Dam near Hot Springs, ARKANSAS. CD 6/7/50.

▲† **Barfield Constr. Co.,** 3108 Pierce St., Amarillo, Tex., LB **$950,139,** Group 1, 9 airmen's dormitories, Bldg. D-1, D-2, D-3, D-7, D-8, D-9, D-10, D-11, D-12; LB **$854,794;** Group 2, 7 airmen's dormitories, Bldg. D-4, D-5, D-6, D-13, D-14, D-15, D-16 and 2 bldgs. for mess and admin. at Laughlin Air Force Base, DEL RIO, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Mar. 4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **E. A. Brunson Constr. Co.,** 4052 Forest Park Ave., St. Louis 8, Mo. LB **$1,156,327.** est. $1,595,000. general contract. brick, concrete, steel high SCHOOL, etc., CLAYTON (ST. LOUIS 5, P.O.), MO. School Dist. of Clayton, Bd. Educ., John L. Bracken, supt. schools, 7500 Maryland Ave., Clayton 5, Mo. Bids Feb. 29. CD 1/18.

▲ **Kenneth Marr,** Warrensburg, Mo. CA 90 HOUSING units;

Martin W. Lange, La Monte, Mo. CA 3 HOUSING units;

Carl S. Wimer, La Monte, Mo. 3 HOUSING units;

Ira De Jarnett, Sedalia, Mo. CA 30 HOUSING units;

E. M. Stafford, Hillcrest, Mo. CA 46 HOUSING units;

Emil G. Lange, 1838 S. Warren St., Sedalia, Mo. CA 2 HOUSING units;

Ben P. Robinson, Sedalia, Mo. CA 46 HOUSING units, west of State Fair Blvd. and 5 HOUSING units, Parkside addn.;

Kennie Miller, Sedalia, Mo. CA 36 HOUSING units;

Ollie W. Lewis, Sedalia, Mo. CA 6 HOUSING units;

Eicholz & Eicholz, Sedalia, Mo. CA 6 HOUSING units for Sedalia Air Force Base, near SEDALIA, MO., Federal Housing Administration, Federal Office Bldg., Kansas City 6, Mo. Total cost **$2,500,000.**

▲† **Carpenter Brothers,** 1335 Plowman St., Dallas, Tex., LB **$2,094,100,** alt. 1 construct 34 inert STORE-HOUSES, NOY 70829, Spec. 32400, at Naval Ammunition Depot, McALESTER, OKLA. Dpt. Navy, c/o R. E. Bassler, Capt. USN, Officer in Charge of Construction, 8th Naval Dist., Naval Station Bldg. 16, New Orleans, La. Bids Feb. 19. CD 2/12.

Rex D. Kitchens Constr. Co., Box 3006 South Austin Station, Austin, Tex., LB **$672,233.** Proj. Tex 112, 50-bed D. M. Cogdell Memorial HOSPITAL, SNYDER, TEX. Scurry Co., Snyder, Tex. Butler-Brasher, 406 Avenue M, Lubbock, Tex., engrs.-archts. Bids Feb. 28.

▲ **Thomas Bate & Sons,** 2311 10 St., Denver, Colo., CA, **$3,233,355,** Curtis Park Site HOUSING Project Colo. 1-9, incl. 450 units, brick, with block back-up, DENVER, COLO. Denver Housing Auth., 1449 Navajo St., Denver, Colo. Bids Feb. 25. CD 3/4, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash., Spokane**—SPRINKLER SYSTEM—B.A. 4/1—Veterans Admin., Munitions Bldg., Wash., D. C., town sprinkler system for Veterans Hospital, Spec. 5237, Proj. 2910.

† **California**—CHLORINATION EQUIPMENT—B.A. 4/1—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point f.o.b. cars Santa Barbara and Carpinteria, one lot of chlorination equipment for Ortega control station; and same for Carpinteria control station, Cachuma Proj. Spec. DS-3689. L. N. McClellan, ch. engr. CD 4/20/45.

Calif., Porterville—INDUSTRIAL SHOPS, etc.—B.A. 4/1—State Div. Architecture, P. Wks. Bldg., Sacramento, industrial shops, garage bldg. at Porterville State Home. Plans deposit $25.

† **Idaho, Mountain Home**—PHOTO LABORATORY—B.A. 4/2 U. S. Eng., City-County Airport, Walla Walla, Wash., photo technical laboratory bldg., at Air Force Base, Inv. 52-20. $50,000. C. Allen, Pocatello, archt. CD 2/13, under LB.

† **California**—B.A. 4/2—**Bureau Reclamation, Dpt. Interior, Sacramento, Folsom Power Plant and appurtenant works, Folsom Unit, American River Division, Central Valley Proj., Spec. DC-2662; adv. ENR 2/21.** CD 4/20/45.

Calif., Lancaster—SCHOOL—B.A. 4/2—Eastside Union Elementary School Dist., Rt. 1, Box 121, Lancaster, Roosevelt Elementary School, $300,000. Plans deposit $25. Frank Wynkoop, 1638 Market St., San Francisco, archt. CD 1/4.

† **Calif., Moffett Field**—BARRACKS, etc.—B.A. 4/2—Dist. P. Wks. Office, Twelfth Naval Dist., Construction Div., San Bruno, new barracks and mess hall at U. S. Naval Air Station, NOY 28885, Spec. 30509. Plans deposit $70.

† **Calif., Santa Ana**—BARRACKS, etc.—B.A. 4/3—Eleventh Naval Dist., San Diego, two 100-men barracks and 1 boiler plant at Marine Corps Air Facility, $250,000. Plans deposit $40.

† **Arizona**—SWITCHYARD, etc.—B.A. 4/3—Bureau Reclamation, Dpt. Interior Davis Dam, Ariz., 68-kv Davis Switchyard and Transformer circuit, Davis Dam Proj. 30 mi. west of Kigman, Spec. DC 3679; adv. ENR 3/6.

† **California**—PIER NOSES—B.A. 4/3—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., cast steel pier noses for turbine draft tubes at Folsom Power Plant, American River Division Folsom Unit, Central Valley Proj., Spec. DS 3648. CD 3/4, under LB.

Calif., Davis—LABORATORY—B.A. 4/4—Bd. Regents University of California, Berkeley, laboratory, poultry husbandry bldg. at University of California, Davis Campus. Plans deposit $50. CD 7/25/49.

† **Wash., Everett**—BUILDINGS, etc.—B.A. 4/8—U. S. Eng., 4835 E. Marginal Way, Seattle, Zone 4, rehabilitate 21 bldgs. and facilities at Paine Field, ENG 45-108-52-175. Plans deposit $15. CD 3/28/51.

† **Arizona**—B.A. 4/10—Bureau Reclamation, Dpt. Interior, Yuma, earthwork, concrete canal lining, structures, Mohawk Canal, station 2053 plus 72.16 to station 2474 plus 08.83 and Radium Hot Spring Flood Protection System, station 170 plus 70 to station 584 plus 50, Wellton Mohawk Div., Gila Proj., about 14 mi. northeast of Wellton, Spec. DC 3683., adv ENR 3/13. CD 9/12/44.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Macco Corp.,** 14409 Paramount Bldg., Paramount, Calif., CA, **$1,099,033,** earthwork, concrete lateral lining structures for Unit 1, Mohawk distr. system, Gila Project, Spec. DC 3618, ARIZONA Bureau Reclamation Dpt. Interior, Yuma, Ariz. Bids Jan. 24, awarded Feb. 28. CD 2/7, under LB.

▲† **J. A. Terteling & Sons,** 4011 Fairview Ave., Boise, Idaho, LB, **$1,280,797,** est. $1,565,653 relocation 19.6 mi. UP and NP railroad tracks 1.9 mi. Hy. and constr. Hy. bridge over Walla Walla River and railroad bridge over Two Rivers Inv. 52-67, WASHINGTON. U. S. Eng., City and County Airport, Walla Walla, Wash. Bids Mar. 4. CD 1/30.

† **Gus J. Bouten Constr. Co.,** N. 216 Division St., Spokane, Wash., CA, **$594,800,** warehouse, Fairchild Air Force Base, ENG 45-165-52-19, SPOKANE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 27. CD 3/4, under LB.

† **Pittsburgh-Des Moines Steel Co.,** Santa Clara-Alvico Roads, Santa Clara, Calif., CA, **$796,780,** fabricate, install, axial flow fan stator for modified 16 ft. high speed wind tunnel, MOFFETT FIELD, CALIF. National Advisory Comm. for Aeronautic Ame., Aeronatuci Laboraty, Moffett Field, Calif. Bids Feb. 5, awarded Feb. 27.

† **Four Companies,** 918 Harrison St., San Francisco, Calif., CA, **$538,768,** base and warehouse and A10 compound etc. at Parks Air Force Base, ENG 84-203-52-23. PLEASANTON, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Jan. 31, awarded Feb. 26. CD 2/7, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Brennan Constr. Co., Pocatello, Idaho, CA, **$635,645** junior high SCHOOL, ALAMEDA, IDAHO. Bannock County School Dist., Alameda, Idaho.

A. W. Brunt, 691 Park Ave., Day Labor, **$400,000** 32 HOUSES, Ammon Highway, IDAHO FALLS, IDAHO. CD 3/7.

▲ **Leonard Constr. Co.,** 37 S. Wabash St., Chicago, Ill. CA **$2,500,000.** sulphuric acid PLANT addn., GARFIELD, UTAH. Garfield Chemical & Manufacturing Corp., Pacific National Life Bldg., Salt Lake City, Utah.

Utah Copper Div., Kennecott Copper Corp., Kearns Bldg., Salt Lake City, Utah, Own Forces. **$500,000,** electrical modernization of Magna MILL, Incl. installation new primary sub-station, 14 new secondary sub-stations, new primary distr. sys. and new secondary distr. sys., MAGNA, UTAH. R. J. Corfield, c/o owner, ch. electrical engr.

W. B. Edmiston, Yakima, Wash., CA, **$684,364,** general contract HIGH SCHOOL, EPHRATA, WASH. School District 165, Ephrata, Wash. Bids Jan. 23. CD 1/29, under LB.

† **John H. Sellen Constr. Co.,** 228 9 Ave. N., Seattle, Wash., LB, **$408,277,** Specialist TRAINING SCHOOL and 3 CLASSROOM BLDGS., Inv. 52-152, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Mar. 4.

▲† **Bennett-Campbell Inc.,** Seaboard Bldg., Seattle, Wash., LB, **$1,259,000,** rehabilitation 190 buildings at Fort Lawton Inv. 52-22, SEATTLE, WASH. Dpt. Army Purch. & Contg. Officer, Fort Lawton, Seattle, Wash. Bids Feb. 29.

▲ **Myers & Major,** Vancouver, Wash., LB, **$2,769,550** construct, manage and finance 300 HOUSING Units, WHIDBEY ISLAND, WASH. Pub. Wks. Officer Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids Mar. 5.

McDonald Bros., 6014 W. Adams Blvd., Los Angeles, Calif., CA, **$896,500,** est. $790,803. Walton Junior High SCHOOL, COMPTON, CALIF. Compton Union High School Dist., 601 S. Acacia St., Compton, Calif. Bids Feb. 5, awarded Feb. 29. CD 2/14, under LB.

Ralph C. Day, Box 833, Arcadia, Calif., LB, **$434,780,** est. $300,000. Maude Price Elementary SCHOOL, DOWNEY, CALIF. Gallatin School Dist., 9513 S. Lexington St., Downey, Calif. Bids Mar. 3. CD 2/14.

The Texear Co., 9304 Santa Monica Blvd., Beverly Hills, Calif., Owner Builds, **$800,000,** 77 frame DWELLINGS in Tracts 3723 and 3858, FONTANA, CALIF.

▲ **Lakewood Park Constr. Co.,** 5327 Lakewood Blvd., North Long Beach, Calif., CA, Approx. **$2,585,100,** 289 stucco DWELLINGS, Arbor Rd., Centralia and Elport Sts., NORTH LONG BEACH, CALIF. Lakewood Mutual Homes NO. 10 5327 Lakewood Blvd., North Long Beach, Calif. Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, Calif., archt.

† **Stolte, Inc.,** Casanova Ave., Monterey, Calif., LB **$900,108,** Schedule 1, 16 motor REPAIR SHOPS and other buildings, etc. ENG 04-203-52-11, FORT ORD, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Mar. 4. CD 2/7.

Williams & Burrows, Burlingame, Calif., LB, **$327,100** general construction;

Bayshore Constr. Co., 744 Folger Ave., Berkeley, Calif., LB, **$502,000** complete work, for HEADQUARTERS bldg. for Highway Patrol, SACRAMENTO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Feb. 26. CD 2/11.

Julian Weinstock, 13753 Ventura Blvd., Los Angeles, Calif., Owner Builds, **$948,000,** 79 frame, stucco DWELLINGS, VAN NUYS, CALIF. McDonald Drafting Service, 6335 Crenshaw Blvd., Los Angeles, Calif., archt.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska** — COMMISSARY — B.A. 4/8 — U. S. Eng., (APO 942 c/o PM Seatle, Wash.), Anchorage, 1 story, bsmnt., 80x175 ft., rein.-con. masonry commissary, Ladd Air Force Base, Eng. 95-507-52-30, $750,000. Plans deposit $25.

Alaska, Fairbanks—B.A. 4/9—Alaska P. Wks., Dpt. Interior, Juneau, water treatment plant, 2 wells and distr. lines. $300,000. Plans deposit $25. C. C. Kennedy, 604 Mission St., San Francisco, Calif., engr.

† **Alaska, Cordova**—B.A. 4/12—Alaska Dpt. P. Wks., Dpt. Interior, Juneau, dam, 5,000 ft. supply main and 5,600 ft. distr. sys., Proj. Aaa 50-A-116, **$132,600.** Plans deposit $25, F. J. Toner, Juneau, engr. CD 1/17.

† **Alaska**—GOVERNORS—B.A. 4/17—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. furnishing, del. f.o.b. cars shipping point or f.o.b. cars Eklunta, 2 oil-pressure, cabinet, vertical-gate-shaft-type governors for regulating the speed of 2 25,000-h.p. 600-r.p.m. vertical-shaft hydraulic turbines for Eklunta Power Plant, Eklunta Proj. Inv. No. DS-3688.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Juneau, **M. J. Kuney Co.,** N 120 Ralph St., Spokane, Wash., CA. **$1,027,144,** bit. surf. 32.95 mi. Seward-Anchorage Hy. from Mile 50 to Girwood, Proj. C1, D1, E1, F4.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Carter Constr. Co., Ltd.,** 419 Cherry St., Toronto, Ont. CA, **$1,045,000,** steel hangar at air force base, TRENTON, ONT. Defence Construction (1951) Ltd., 441 Queen's Quay W., Toronto, Ont. Bids Jan. 29, awarded. Mar. 4. CD 1/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **A. F. Byers Constr. Co., Ltd.,** 5674 Western Ave., Montreal, Que., **$2,500,000,** 1 story, 240x600 ft., rein.-con., structural steel, brick, PLANT addns. No. 1 extension Building "U", 1 story 210x420 ft., 2 story 100x210 ft. Production Engineering Bldg., similar constr. as plant addns., Rockfield Ave., LACHINE, QUE. Northern Electric Co., Ltd., 1600 Notre Dame St. W., Lashine, Que. CD 12/26/50.

LATIN AMERICA

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LOW BIDS AND CONTRACTS

▲ **Morrison-Knudsen Co., Inc.,** 319 Broadway, Boise, Idaho, CA. Approx. **$10,600,000.** construct Barbosa-Bucaramanga Rd., Bucaramanga-Cucuta Rd. and Cucuta Gammarra Rd., COLOMBIA. Minister P. Wks., Bogota, Colombia.

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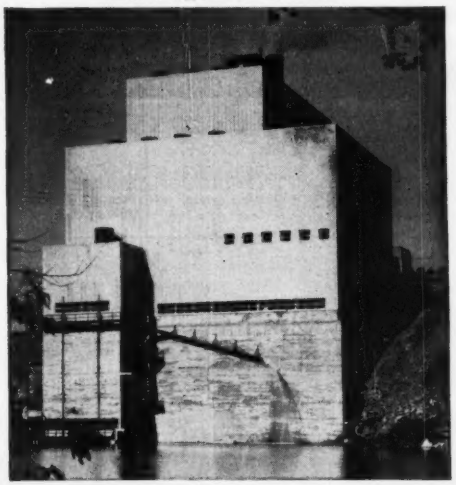

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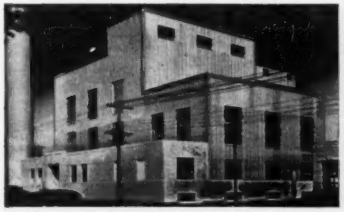

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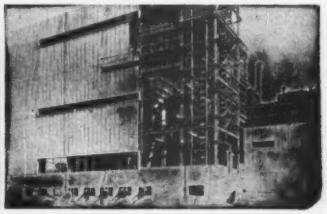

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Proposed Projects

WATER SUPPLY

Calif., Monrovia—City, City Hall, defeated $493,000 bonds, water system imprvs. James M. Montgomery, 15 N. Oakland St., Pasadena, consult. engr. CD 1/26.

▲ **Calif., San Diego**—City, Civic Center, voted $6,500,000 bonds, completion of Sutherland Dam and conduit. CD 2/14.

▲ **Ga., Decatur**—Dekalb Co., Court House, bond election Apr. 2, WW imprvs., $1,000,000. CD 10/15.

▲ **Ill., Chicago**—City, City Hall, tunnel connecting proposed water filtration plant at Navy Pier with Wilson Ave. Pumping Station, $16,000,000. CD 1/30/51.

Ky., Elkhorn City—City, water sys., Maurice L. Miller, Mac Dowell Bldg., Louisville, Zone 2, consult. engr.

La., Delhi—Town, $175,000 bond election Apr. 1, WW imprvs.

▲ **Okla., McAlester**—City, City Hall, bond election Apr. 15, WW extens. $1,000,000. W. R. Holway, 302 E. 18 St., Tulsa, consult. engr.

▲ **Okla., Tulsa**—City, City Hall, voted bonds, Feb. 26, WW extens. $7,600,000. W. R. Weston, city engr. CD 1/23.

Tex., Kermit—City, City Hall, c.l. water main and distr. lines, $80,000; water storage tower, steel and concrete constr. $45,000.

Tex., Taft—City, E. M. Beard, mayor, voted bonds Feb. 29, WW. $100,000.

▲ **Tex., Galveston**—City, City Hall, bond election Apr. 19, storage, pumping, $500,000; distr. lines and mains, $1,000,000; water supply, $1,500,000; sys. rehabilitation, $436,000; water main between Fairwood Booster Station at Hitchcock to Galveston mainland, $550,000. CD 2/19.

SEWERS, WASTE DISPOSAL

▲ **Calif., Hayward**—City, City Hall, $1,700,000 bond election April 8, sewage treatment plant. CD 11/27/51.

Ont., Ottawa—Municipality, 7,000 water meters, $204,000. W. E. MacDonald, Civic Offices, Rideau St., engr. CD 8/24/40.

Que., Levis—City, P. Lemieux, secy., water main exten. $300,000. R. E. Demers, c/o owner, engr. Z. Langlais, 105 Cote de la Montagne, Quebec City, engr. CD 8/23/45.

Calif., Los Angeles—Los Angeles County Sanitation Dist. 14, 2020 Beverly Blvd., Los Angeles, 55,000 ft. 12 and 15 vitr. clay pipe, West Side Trunk Line, Lancaster, $60,000; 8,900 ft. 15 and 18 in. vitr. clay pipe, Dist. 14, Outfall sanitary sewer, Lancaster, $60,000. A. M. Rawn, c/o owner, engr.

Calif., Los Angeles—Los Angeles—County Sanitation Dist. 18, 2020 Beverly Blvd., 6450 ft. 10 and 12 in. concrete pipe, East Imperial Hy. Trunk Sanitary Sewer, Norwalk, $60,000; 6050 ft. 12 and 15 in. concrete pipe, East Norwalk Trunk, Norwalk, $60,000. A. M. Rawn, c/o owner, engr.

Calif., Los Angeles—Los Angeles County Sanitation Dist. 15, 2020 Beverly Blvd., 10,000 42 in. rein.-con. sanitary sewer trunk line, Puente Connection Sect. 2, El Monte, $200,000. A. M. Rawn, c/o owner, engr.

▲ **Calif., Los Angeles**—Los Angeles County Sanitation Dist. 2, 2020 Beverly Blvd., 1,300 ft. 72 in. rein.-con. sanitary sewer, JO "A" Unit 2A and 2B, Harbor City, $65,000; 21,700 ft. 57 in. rein.-con. sanitary sewer trunk J.O. "D" Unit 2, Sect. 2, Gardena, $1,000,000; 7,200 ft. 30 in. rein.-con. sanitary sewer trunk J.O. "C" Unit 6A Lakewood, North Long Beach, $100,000. A. M. Rawn, c/o owner, engr.

▲ **Calif., Oakland**—City, City Hall, drainage for West Oakland to incl. pumping plant, etc. $5,000,000. Brown & Caldwell, 233 Sansome St., San Francisco, consult. engrs. CD 5/16/45.

Conn., West Haven—Town, Bd. Selectmen, about 1¼ mi. sewer Washington Ave. from George St. to sewage treatment plant in Biohm St. $100,000.

Ill., Champaign—City, City Hall, storm sewer in Russell St., $100,000. John T. Kearns, City Hall, city engr. CD 11/17/49.

Ill., Urbana—City, City Hall, storm sewer in Maple St., $452,300. M. H. Kinch, City Hall, Urbana, city engr. CD 10/12/44.

Ind., Lafayette—City, sewage disposal sys. $1,800,000. Boyd E. Phelps, 1000 Washington St., Michigan City, consult. engr. CD 3/12/48.

▲ **Okla., Tulsa**—City, City Hall, voted bonds Feb. 26, sanitary sewer extens., $5,750,000; storm sewers, $3,272,000. W. R. Wooten, city engr. CD 1/23.

▲ **Pa., Barren Hill**—Bd. Supervs. Whitemarsh Twp. Barren Hill, sewage disposal plant. $1,000,000.

Tex., Arlington—Morris L. Silberman & Assoc., 3342 Kelton St., Dallas, sanitary sewers, $85,000; storm sewers, $65,000, southeast sect. of town.

Tex., Houston—Louis L. Strey, Citizens State Bank Bldg., storm sewers, $60,000; sanitary sewers, $65,000, out of Seagler Estate off Westheimer Rd.

Tex., Taft—City, E. M. Beard, mayor, voted bonds Feb. 29, sanitary sewerage sys. $100,000.

Tex., Weatherford—City, Jim Wright, mayor, voted bonds Feb. 29, sewage disposal plant, $200,000; 18 mi. sanitary sewer main and lines, $240,000.

Wis., Arcadia—City, sewage treatment plant and sanitary sewers. $150,000. Davy Eng. Co., 524 Main St. La Crosse, consult. engr.

Mich., Sandusky—City, City Council, sewage disposal treatment plan. $250,000.

Okla., Allen—City, sewage disposal plant imprvs. $60,000; new sewage disposal plant, $60,000. Herman Groseclose, 1928 N.W. 39 St., Oklahoma City, engr.

BRIDGES

Ala., Montgomery—Montgomery and Lowndes Counties Boards Revenues, c/o Montgomery Co., Clerk, Court House, Montgomery, bridge over Pintlala Creek, $100,000.

Ind., Hammond—Bd. Comrs. Lake Co., Court House, Crown Point, bridge over Little Calumet River on Columbia St., $165,000. Starme Co., Inc., 21 E. Van Buren St., Chicago, 4, Ill., consult. engr. CD 10/12/49.

Mich., Lansing—City Council, rein.-con. overpass over Michigan Central R.R. tracks, Saginaw St. $750,000, Foster Eng. Co., 804 Bauch Bldg., Lansing, consult. engr. CD 10/30/50.

Mo., Kansas City—City, Dpt. P. Wks., City Hall, Zone 6, exten. Chestnut viaduct with trafficway connections, $823,000.

Okla., Tulsa—City, City Hall, voted bonds Feb. 25, grade separations on various streets, $950,000. W. R. Wooton, city engr. CD 1/23.

▲ **RHODE ISLAND**—State P. Wks. Dpt., State Office Bldg., Providence,
Pawtucket—bridge, Division St. $5,225,000. Praeger-McGuire, 142 Richmond St., Providence, consult. engrs.

▲ **Tenn., Memphis**—City, City Hall, underpass of I.C. R.R. tracks, sidewalks, paving and gutters on Crump Blvd. $1,000,000. Wm. Fowler, city engr.

Tex., Abilene—City, City Hall, bond election Apr. 1, bridge and drainage. $100,000. CD 9/11.

Wis., Appleton—City, Lawe Street Bridge, $200,000-$225,000. M. B. Coifman, 1220 N. Milwaukee St., Milwaukee, Zone 2, consult. engr. McMahon Eng. Co., Menasha, assoc. engr.

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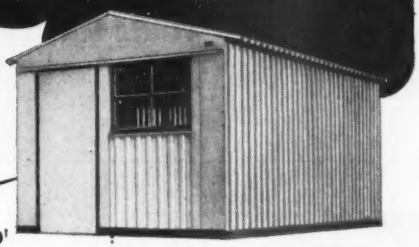

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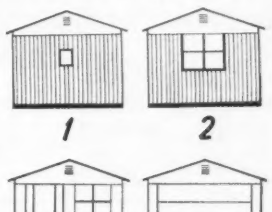

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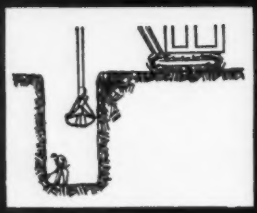

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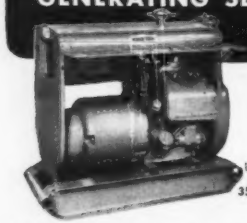

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STREETS AND ROADS

Ark., Magnolia—City, voted bonds, street imprvt. program, $100,000. CD 2/6.

Colo., Denver—City and Denver Co., City and County Bldg., Street Paving Dist. 180, concrete curb, gutter, sidewalk, grav. base course, b. conc. paving and necessary incidental imprvs., $250,615. Terry Owens, City and County Bldg., city engr.

Colo., Denver—City and Denver Co., City and County Bldg., Denver, Street Paving Dist. 179 concrete curb, gutter, sidewalk, gravel base course, b. conc. paving and necessary incidental imprvs. $152,000. Terry Owens, City and County Bldg., city engr.

▲ **D. C., Wash.**—D. C. Highway Dpt., 14 and Pa. Ave. N.W., pavement and asph. surf. various locations in district, $150,000; heater method, resurf. various locations, $150,000; cover work, various locations, $150,000; curb and gutter work at various locations, $150,000; pavements and asph. topping at various locations, $175,000; constr. new sidewalks, and alleys various locations, $125,000; curb and gutter work at various locations, $150,000; paving E. Capitol St. Bryant St. to District line, $2,000,000; asph. surf. various locations, $175,000; resurfacing (Heater method) cover contract at various locations, $125,000. CD 1/27/44.

▲ **Ga., Decatur**—De Kalb Co., Court House, Decatur, bond eletcion Apr. 2, road imprvs. $1,000,000. CD 10/15.

Ill., Rockford—Winnebago Co., Court House, resurf., widn., and straightening 2 mi. Harrison Ave. and reconstr. one railway viaduct near here. $300,000. A. R. Carter, Court House, co. engr.

Ia., Grundy Center—Grundy Co., Grundy Center, grading, surf., culverts and bridges, $108,959 J. W. Wiersma, Grundy Center, co. engr.

Neb., Omaha—Douglas Co., Omaha, North-South Belt Hy. at outskirts of west side. Harland Bartholomew & Assoc., 317 N. 11 St., St. Louis, Mo., consult. engrs. CD 2/21.

Okla., Norman—City, City Hall, bond election Apr. 8, street imprvs. $300,000. C. D. Kiger, city engr. CD 1/23.

▲ **Okla., Tulsa**—City, City Hall, voted bonds Feb. 26, traffic ways and street imprvs. $3,395,000. W. R. Wooten, city engr. CD 1/23.

Tex., Abilene—City, City Hall, bond election Apr. 1, street paving, $475,000; reconstruction, repairing, reconditioning portion existing streets, $250,000. CD 9/11.

Tex., Arlington—Morris L. Silberman & Assoc., 3342 Kelton St., Dallas, streets, construction and asph. topping, in southeast sect. of town. $100,000.

Tex., Houston—Sears Roebuck & Co., W. Arthington & S. Homan Sts., Chicago, Ill., grading, hard type paving and lighting sys., 40,000 sq. ft. for auto parking at Harrisburg Store, $80,000; 35,000 sq. ft. for auto parking at Wayside Store, $75,000.

Tex., San Antonio—Bexar Co., Court House, 8½ mi. lateral road imprvs. Dist. 1, $75,000; 4½ mi. lateral road imprvs., and 3 small concrete pipe drainage structures, $71,500; 5¼ mi. lateral road imprvs., 2 small concrete culvert structures, $65,000. L. White, co. engr. CD 10/2.

▲ **Tex., Tyler**—City, voted $195,000 bonds Feb. 26, street paving program throughout city. $1,950,000. J. P. Ferrill, city engr. CD 2/13.

▲† **ALASKA**—Alaska Road Comm., Dpt. Interior, Juneau, paving Alaska Hy., Tok Junction to Northway Junction $4,860,000;

imprv. Glenn Hy., Glennallen to Tok Junction, $3,340,000;

paving Richardson Hy., Thompson Pass to Tonsina and Glenn Hy. to Paxson, $3,500,000. W. J. Niemi, ch. engr.

Ont., Toronto—Scarborough Twp., 2001 Eglinton Ave. E., road program and maintenance for 1952. $890,000.

EARTHWORK, WATERWAYS

Ia., Clarinda—Page Co., Clarinda, strengthening Nodaway River, $195,150. A. C. Christensen, 622 Wilson Ave., Council Bluffs, consult. engr.

Tex., Monte Alto—Willacy County Water Dist. Bd., Monte Alto, bond election Mar. 29, Job 1, existing irrigation sys. rehabilitation, $200,000; Job 2, water canals, $200,000; Job 3, pumping and addnl. facilities extens. $100,000.

AIRPORTS

Ky., Paducah—PASSENGER TERMINAL—Paducah Airport Bd., passenger terminal at Barkley Field, $135,000. CD 2/2/51.

Minn., International Falls—AIRPORT IMPRVS.—City, V. L. Peterson, clk., runway extension, Municipal Airport, J. D. Salo, 15 E. First St., Duluth, consult. engr.

† **Miss., Meridian**—RUNWAY—U. S. Eng., P.O. Box 1169, 2301 Grant St., Mobile 7, Ala., runway for jet aircraft at Key Field for Mississippi National Guard Air Force, $100,000.

▲ **R. I., Lincoln and Smithfield**—AIRPORT—State Aeronautics Div., State Airport, Hillsgrove, runway and bldgs. North Central Airport. $2,500,000.

PUBLIC BUILDINGS

Ala., **Altoona**—HOUSING—Altoona Housing Auth., Altoona, housing units. $350,000.

Ala., **Mobile**—COURT HOUSE—Mobile Co., Court House, plans by Henry J. Apfelbach, 80½ St. Francis St., rebuild court house, Approx. $500,000. CD 6/25.

▲ **Calif., Alhambra**—SCHOOL—Alhambra School Dist. 601 N. Garfield St., $4,051,000 bond election June 3, school constr. in High School District; $1,900,000 bond election June 3, school constr. in Elementary School District.

Calif., Fullerton—SCHOOL—Fullerton School Dist. 340 E. Wilshire Blvd., Fullerton, voted $600,000 bonds schools. Marsh, Smith & Powell, 208 W. 8 St., Los Angeles, archts. CD 2/14.

▲ **Calif., Long Beach**—WAREHOUSE—Long Beach Harbor Dpt., 1333 El Embarkadero, 150x1500 ft., rein.-con. warehouse on Pier "A" Berths 7, 8 and 9 $1,000,000. J. H. Davies, 730 E. 3 St., consult. engr. CD 12/6/44.

▲ **Conn., Hartford**—SCHOOL—City, 550 Main St., school, Barbour St. Section, $1,250,000.

▲ **Ga., Decatur**—HOSPITAL—DeKalb Co., Court House, bond election Apr. 2, hospital, $1,000,000.

▲ **Ga., Macon**—HOUSING—Macon Housing Auth., Macon plans by Associated Architects, c/o Dennis & Dennis, Bankers Insurance Bldg., 300 housing units, $2,000,000. CD 1/4/40.

▲ **Kan., Abiline**—SCHOOL—School Bd., voted $855,000 bonds Feb. 25, high school, $1,355,000. CD 2/5.

▲ **Kan., Manhattan**—VETERINARY BLDG., etc.—State, Bd. Regents, Dr. Jas. A. McCain, pres., veterinary bldg., $500,000; library addn., $375,000; experimental mill, $143,000, Kansas State College.

▲ **Minn., Fosston**—SCHOOLS—Bd. Educ., School Dist. 142, M. R. Lee, clk., voted $350,000 bonds Feb. 20, 1 story, E-shaped school. $425,000. Thorshove & Cerny, 400 Metropolitan Life Bldg., Minneapolis, archts.

▲ **Neb., Grand Island**—SCHOOLS—Bd. Educ., Grand Island, voted $4,000,000 bonds, schools, Frank McNett, Grand Island, archt. CD 1/9.

▲ **N. J., Camden**—PENAL INSTITUTION—Camden Co., Court House Square, penal institution, $1,083,000. CD 10/2/47.

▲ **N. Y., Brooklyn**—HOSPITAL—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by DeYoung, Moscowitz & Rosenberg, 205 E. 42 St., New York, Zone 17, altering hospital bldg. 425-63 Clarkson Ave. $1,001,200; hospital bldg. alterations, 536 Winthrop St., $379,000; hospital bldg. alterations, 686 Albany Ave., $379,000, all foregoing at Kings County Hospital. CD 2/14/45.

▲ **N. Y., Clifton Park**—SCHOOL—Central School Dist. of Clifton Park, Clifton Park, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago 6, Ill., central school. $2,300,000.

▲ **Okla., Tulsa**—FIRE STATIONS—City, City Hall, voted bonds Feb. 26, fire stations. $1,085,000. W. R. Wooten, city engr. CD 2/12.

▲ **Okla., Tulsa**—LIBRARY—City, City Hall, voted bonds Feb. 26, library bldgs. $1,500,000. W. R. Wooten, city engr. CD 1/23.

Pa., New Castle—SCHOOL—School Dist. of New Castle, New Castle, plans by The Thayer Co., 408 Greer Bldg., brick grade School, North St. $300,000. CD 1/22.

▲ **Pa., Pittsburgh**—SCHOOLS—Baldwin Twp. Municipal Auth., Brentwood, Pittsburgh, plans by Altenhof & Bown, 351 5th Ave., Sickmeller Grade School addn. $400,000; McGibney Grade School addn. $500,000; Junior High School, $1,500,000, all foregoing in Baldwin Twp.

▲ **Tex., Abilene**—SCHOOLS—Abilene Independent School Dist., Abilene, bond election Apr. 1, Senior High School, $850,000; Junior High School, $750,000; Grade School 1, $400,000; Grade School 2, $425,000; Elementary School 1, $375,000; Elementary School 2, $300,000; Elementary School 3, $400,000; stadium and field house, $125,000; school remodeling, addn. $350,000.

▲ **Tenn., Lawrenceburg**—PLANT—City plans by Robert & Co. Assoc., 96 Poplar St. N.W., Atlanta, Ga., textile plant, $4,500,000, Wamsutta Mills, leesee.

▲ **W. Va., Kingwood**—HOSPITAL—County Court of Kingwood, Kingwood, plans by L. D. Schmidt & Son, 309 Cleveland Ave., Fairmont, 3 story, bsmnt, steel frame, brick, concrete hospital, $1,250,000.

COMMERCIAL BUILDINGS

▲ **Calif., Los Altos**—HOMES—Goforth & McGan Inc., El Camino Real, Santa Clara, 60 homes on Grant Rd., near here. $1,000,000.

Calif., Sun Valley—DWELLINGS—Contractor's Investment Inc., 1737 Pacific Coast Hy., Lomita, plans by Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, 58 frame, stucco dwellings, in Sun Valley Dist. $580,000.

▲ **Conn., Darien**—SHOPPING CENTER—Thomas E. Golden, Outlook Dr., Norton, shopping center, incl. 34 stores and parking facilities for 800 cars, between Glenwood Rd. and West Ave., Norton Heights R.R. Station, $1,000,000.

▲ **Fla., Miami**—TRADE CENTER—Inter-American Center Auth., Dr. W. H. Walker, chn., 118 N. E. Istave St., Inter-American Cultural and Trade Center on Virginia Key, $35,000,000.

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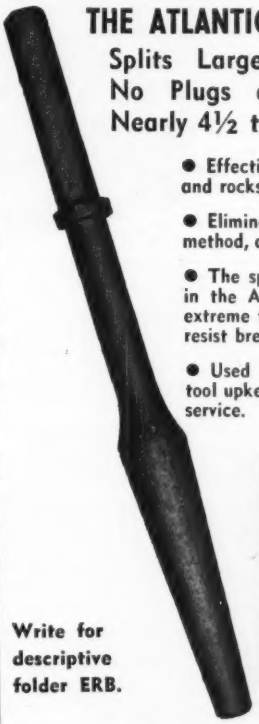

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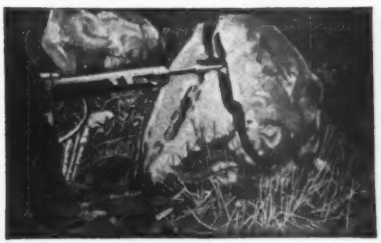

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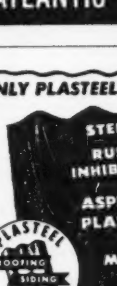

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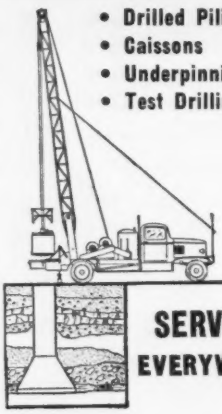

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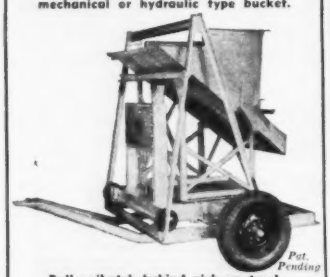

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▲ **Md., Indian Head**—HOUSING—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., plans by Milton J. Prassac, 1737 Harvard St. N. W., Wash., D. C., construct, manage and finance 400 family housing units, Naval Powder Factory, $3,200,000.

▲ **Mass., Ayer**—DWELLING—U. S. Eng., North Atlantic Div., 90 Church St., New York, N. Y., 200 dwelling units for officers and personnel, $1,500,000.

Mich., Southfield—CHURCH—Our Lady of Martyrs Parish, Southfield, plans by Donaldson & Meirer, 1265 Griswold St., 1 story, bsmnt., brick, stone church, $300,000.

▲ **Mo., West Platte Woods (RFD Parkville)**—HOMES—Carl O. Nelson Co., 3739 Broadway, Kansas City 2, Mo., 120 homes, plus utilities, sewers, streets, $1,200,000.

▲ **N. Y., New York**—OFFICE—Federation of Jewish Philanthropies of New York, 71 W. 47 St., 12 story office, Lexington Ave. and 59 St. $2,000,000.

▲ **Pa., Morrisville**—HOMES—Oakdale Development Co., 29 E. Bridge St., between 75 and 100 ranch type homes on 30-acre tract on Big Oak Rd., Lower Makefield Twp. $1,000,000.

▲ **Pa., Pittsburgh**—NURSES HOME—St. Joseph's Hospital, 2117 E. Carson St., plans by McMullin & McMullin, 217 9th St., 5 story, bsmnt., 114x120 ft., brick, block, steel nurses home. $1,000,000.

▲ **Pa., Uniontown**—HOSPITAL—Uniontown Hospital, Uniontown, plans by J. C. Fulton & Son, 804 2nd Natl. Bank, brick, concrete hospital annex. addn. $1,000,000.

▲ **Tex., Arlington**—DWELLING—Morris L. Silberman, 3342 Kelton St., Dallas, Unit 1, 75 mostly frame with stone trim dwellings, concrete slab fdn. $825,000; Unit 2, 90 frame, stone trim dwellings, concrete slab fdn. $990,000; Unit 3, 75 frame dwellings, $715,000; Unit 4, 50 frame dwellings, $550,000; Unit 5, 62 dwellings, $682,000; Unit 6, 40 dwellings, $440,000, all foregoing in an area of Arlington Terrace.

▲ **Tex., Houston**—DWELLINGS—Ben A. and Earl N. Gilbert, 5601 Airline St., plans by F. Perry Johnston, 3908 Main St., Job 2, 50 dwellings, $375,000; Job 3, 45 dwellings, $337,500; Job 4, 38 dwellings, $300,000; Job 5, 27 dwellings, $315,000, near here. CD 2/26.

▲ **Tex., Houston**—HOSPITAL—St. Lukes Episcopal Hospital, Gulf Bldg., plans by Hiram A. Salisbury, 3501 Buffalo Dr., and Staub & Rather, 2814 Virginia St., hospital addn. $1,500,000. CD 11/1/49.

Tex., San Antonio—DWELLINGS—Quail-Cut Co., 1426 N. Brazos St., 50 dwellings, in new area Loma Linda Heights, $300,000; 65 dwellings, south of 3500 blk. Culebra Rd. $335,000.

▲ **Tex., San Antonio**—DWELLINGS—Quincy Lee Constr. Co., 211 Olmos Dr. West, Unit 1, 55 frame type dwellings, concrete slab fdn. $385,000; Unit 2, 50 frame type dwellings, concrete slab fdn. $350,000; Unit 3, 54 frame type, dwellings, concrete slab fdn. $378,000; Unit 4, 60 frame type dwellings, concrete slab fdn. $420,000; Unit 5, 58 frame type dwellings, concrete slab fdn. $406,000; Unit 6, 67 frame type, dwellings, concrete slab fdn. $469,000, all foregoing in portion Bellaire sub-division off Loop 13.

▲ **Utah, Salt Lake City**—HOSPITAL—Later-Day Saints Hospital, 8 Ave. and C St., plans by Young & Hansen, 66 Canyon Rd., 7 story hospital addn. $2,000,000. CD 6/13/45.

▲ **Va., Dahlgren**—HOUSING—Potomac River Naval Command, Naval Gun Factory, Wash. D. C., plans by E. Tucker Carlton, 1009 E. Main St., Richmond, construct, manage, finance, 350 housing units, Naval Proving Ground. $2,800,000.

▲ **Wis., Milwaukee**—Y. M. C. A. BLDG.—Young Mens Christian Assn., 633 N. 4 St., Zone 3, plans by Grassold & Johnson, 734 N. Jefferson St., Zone 2, Y. M. C. A. bldg. $3,500,000. CD 6/29/44.

INDUSTRIAL BUILDINGS

▲ **Ala., Mobile**—PLANT—Stauffer Chemical Co., 420 Lexington Ave., New York, N. Y., chemical plant. $1,000,000.

▲ **Ark., Batesville**—PLANT—Westmoreland Manganese Co., Batesville, processing plant at or near here. $4,000,000.

Ark., Nashville—PLANT—W. R. Case & Sons Cutlery Co., Bradford, Pa., plant. $150,000.

▲ **Colo., Denver**—PLANT—Public Service Co., 900 15 St., Lacombe Power Plant, $7,300,000. M. M. Koch, vice pres. and elec. oper.

Ga., Dalton—PLANT—Tillotson Rubber Co., Needham Heights, Mass., rubber plant. Approx. $100,000.

Ind., Indianapolis—WAREHOUSE—Omar, Inc., 1910 Harney St., Omaha, Neb., branch warehouse. $120,000. A. B. Corn, c/o owner, engr.

Ky., Lexington—WAREHOUSE—R. J. Reynolds Tobacco Co., Reynolds Office Bldg., Winston-Salem, N. C., rebuild warehouse, $500,000.

▲ **La., Baton Rouge**—REFINERY—Esso Standard Oil Co., North Baton Rouge, refinery distillation units, $7,000,000; expansion fluid catalytic cracking facilities, $9,000,000. CD 10/9.

La., Jennings—BOOSTER STATION—Texas Pipe Line Co., Texas Co. Bldg., Houston, Tex., pumping or booster station, $400,000.

▲ **Me., Millinocket**—MILL—Great Northern Paper Co., Manly, C. McDonald, pres., Millinocket, Kraft Mill, $6,000,000.

Md., Towson—STORAGE, etc.—Harry T. Campbell Sons Corp., Towson, 200x87x23 ft., masonry storage and warehouse, near Cowenton.

▲ **Mo., Kansas City**—MILL—Ralston Purina Co., 2334 Rochester St., feed mill, $1,250,000.

▲ **Mont., Superior**—FACTORY—Diamond Match Co., Superior, match factory, lumber mill and sawmill $4,500,000.

N. J., Trenton—TRUCK TERMINAL—Riss & Co., 9 and Allen Sts., North Kansas City, 16, Mo., 1 story, 58-door truck terminal on Brunswick Pike U. S. Rte. 1, 3 mi. north of Trenton city line, Lawrence Twp., $185,000.

▲ **O., Dayton**—PLANT—Masters Electric Co., 126 Davis St., Zone 1, press and steel handing plant. $1,000,000.

Pa., Millvale—BUS GARAGE—Pittsburgh Railways Co., 435 6th Ave., Pittsburgh, 1 story, 100x220 ft., block, steel frame bus garage, $170,000.

Okla., Ardmore—PLANT—Ben Franklin Oil Co., Ardmore, reconstruct portion refinery plant, $450,000.

Pa., Phila.—FACTORY—Connolly Containers, 51 St. and Botanic Ave., 1 story, 250x330 ft., cinder block factory. Harry L. Haeberle, 1420 Walnut St., consult. engr.

Tex., Amarillo—PARKING GARAGE—First National Bank of Amarillo, Amarillo, multi-story, masonry parking garage. $350,000.

Tex., Fort Worth—MILL—Purina Mills, 1301 E. 4 St., reconstruct damaged portion Purina Mills. $100,000.

Tex., Galveston—PLANT—Gulf Oil Corp., Gulf Bldg., Houston, reconstructing boiler plant, $200,000; exten., reconstructing tank farm-loading station pipe lines, $60,000; reconstructing loading station plant, $100,000, near here.

▲ **Tex., Harty**—PAPER MILL—Southland Paper Mills, Inc., Harty, paper mill. $15,050,000.

Tex., Longview—DISTILLING TOWER—Skelly Oil Co., Longview, reconstruction of refinery distilling tower, near here. $350,000.

▲ **Wash., Tacoma**—PLANT FACILITIES—Kaiser Aluminum & Chemical Corp., Kaiser Bldg., Oakland, Calif. addnl. facilities at aluminum reduction plant. $2,850,000.

Wis., Kewaskum — WAREHOUSE — Wm. H. Heinemann Creameries, Inc., Kewaskum, plans by Grassold & Johnson, 734 N. Jefferson St., Milwaukee, Zone 2, 2 story, part bsmnt., 65x125 ft., rein.-con., concrete blocks warehouse.

▲ **Alta., Edmonton**—PAPER MILL—Beverly Pulp & Paper Mills Ltd., Sweezey Securities, 132 St. James St. W., Montreal, Que., pulp and paper mill on eastern outskirts of town, $5,000,000.

UNCLASSIFIED

▲ **Alabama**—GAS TRANSMISSION MAINS—South Alabama Natural Gas Dist., c/o J. W. Goodwin Eng. Co., engr., 2111 7 Ave. south, Birmingham, natural gas transmission mains, etc. in southeastern section of state. $18,000,000.

▲ **California**—PIPELINE—Pacific Gas & Electric Co., 445 Sutter St., San Francisco, aprox. 50 mi. pipe line incl. 20 mi. of 16 in. line in Fresno Co., exten. from Burrel to point near Easton; 15 mi. 20 in. pipe also in Fresno Co. from Helm to the company's Topock-Milpitas line and paralleling a portion of an existing line and 15.5 mi. 12¾ in. pipe which would parallel the existing Madera-Livingston line in Madera Co., $1,979,000.

Conn., Hartford—RECREATION AREA—City, 550 Main St., recreation area Mark Twain School Grounds, $140,000.

▲ **Louisiana**—OIL PIPE LINE—Interstate Oil Pipe Line Co., c/o Standard Oil Bldg., Shreveport, 68 mi. 16 in. welded joint crude oil pipe line (replacing existing 10 ft. 8 in.) located between Raceland and near Baton Rouge, $1,360,000; replacing 8 ft. 10 in. crude oil line from Sunset to Anchorage Terminal with 55 mi. 16 in., Sunset, $1,100,000; 32 mi. 20 in. crude oil pipe line between Bunkie-Milville (replaces existing 8 ft. 2 in. line), Melville, $800,000; 18 mi. 12 in. crude oil pipe line located south of Raceland (replaces existing 68 in. line between Raceland-LaRose Station, Raceland, near Baton Rouge, $185,000; laying 23 mi. 12 in. crude oil line south of New Iberia to replace existing 6 in. line $125,000; 3,000 hp pump station, Bunkie-Milville $450,000; 1,200 hp pump station, New Iberia $150,000.

Mich., Bay City—PARK—City, Carl H. Smith, pres., War Memorial Bd., plans by Alden B. Dow, Bay City, imprvs. at Memorial Park incl. athletic facilities, entrances, outdoor swimming pool, bathhouses, etc., Riverside Sect., $280,000.

▲ **Mich., Owosso**—GAS MAINS—Consumers Power Co., S. C. Dowling, div. mgr., Owosso, 4½ mi. gas mains, imprv. 12 mi. existing mains, 2 gas regulator stations addn. power supply and distr facilities, Shiawassee and adjoining counties. $1,900,000.

▲ **Okla., Tulsa**—PARK—City, City Hall, voted bond Feb. 26, park imprvs. $2,060,000. W. R. Wooten, city engr. CD 1/23.

▲ **Texas**—OIL PIPE LINES—Sun Pipe Line Co., Snyder, 45 mi. 12 in. crude oil pipe lines, Kent, Scurry and Coke Counties, $775,000; 55 mi. 10 and 12 in. crude oil pipe lines, Nolan, Mitchell and Fisher Counties, $875,000.

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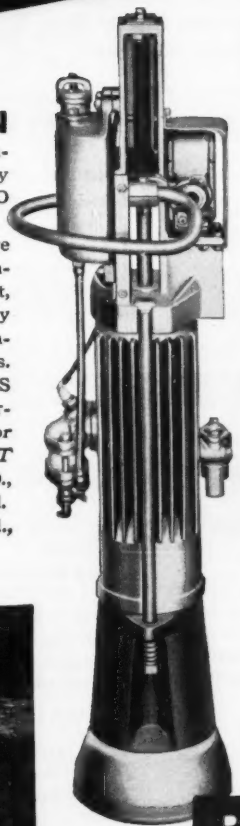

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NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † **Volpe Constr. Co.**, 45 Eastern Ave., Malden, Mass. LB $3,963,343. building facilities, Air Defense Laboratory adjacent to Hanscom Airport off Wood St., Eng. 19-016-52-33, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Cram & Ferguson, 248 Boylston St., Boston, Mass., archts. Bids Mar. 6. CD 2/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **J. A. Singerella Co.**, 15 Bay State Rd., Dorchester, Mass. LB $1,184,000. P-H9 Contr. 2, SERVICE BLDG., Chronic Disease Hospital, Forest Hills, BOSTON, MASS. State, Dpt. P. Health, State House, Boston, Mass. Bids Mar. 7. CD 2/28.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **Md., Sykesville**—MEDICAL AND SURGICAL—B.A. 3/27—State, Dpt. P. Improvts., 506 Park Ave., Baltimore, brick, cinder block Springfield Medical and Surgical Bldg. $1,250,000. Plans deposit $50. Henry Powell Hopkins, 10 E. Mulberry St., Baltimore, archt. Jas. Posey & Assoc., 10 E. Pleasant St., Baltimore, mech. engrs. Van Rensselaer Saxe, 1701 St. Paul St., Baltimore, struct. engr. CD 1/22/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith Office Bldg., Albany, **Construction Aggregates, Inc.**, 1 E. 42 St., New York 17, N. Y. CA. $5,646,063, piers for westerly half of Tarrytown-Nyack Bridge, Rockland Co. CD 2/20, under LB.

▲ **Horn Constr. Co. Inc.**, 2174 Hewlett Ave., Merrick, N. Y. LB $4,874,955, Cont. 6, superstructure of new Vernon Ave. Bridge over Newtown Creek, between Brooklyn and Queens Boros. BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids March 5. CD 2/1.

▲ **Eastern Engineering Co.**, 4 N. North Carolina Ave., Atlantic City, N. J., CA, $2,528,893, general construction water filtration plant addn. at Calhoun St. and Delaware River TRENTON, N. J., City, Dpt. P. Wks., Water Div., City Hall, Trenton, N. J. Bids Feb. 28, awarded Mar. 11. CD 3/4 under LB.

▲† **Shaw & Estes**, Box 2399, Dallas Tex., LB $2,209,366. test bldg., jet engine test facilities, storm and industrial waste sewers and water lines, MIDDLETOWN, PA. Dpt. Army, Middletown, Pa. Bids Feb. 21. CD 1/24.

▲ **McElwee Courbis Constr. Co., Inc., and Ertel Constr. Co.**, 503 Market St., Camden, N. J., LB $4,047,397, est. $3,774,000. sewer treatment works, sanitary and storm sewers, water supply lines and distr. sys., road constr. YORK, PA. York Sewer Auth., City Hall, York, Pa. Albright & Friel, Inc., 121 N. Broad St., Phila., Pa., engr. Bids Feb. 19. CD 2/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hampton Terrace Homes**, c/o John W. Burton, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner builds. Approx. $1,500,000. 75 HOUSES on 18-acre tract at Cloverdale Blvd. near Horace Harding Blvd., BAYSIDE, N. Y.

▲ **Cauldwell-Wingate Co.**, 101 Park Ave., New York 17, N. Y. CA. Approx. $10,000,000. 50 story store and OFFICE southeast corner of Park Ave. and 58 St., NEW YORK, N. Y. Syndicate Louis Denberg, pres., c/o H. I. Feldman, archt., 415 Lexington Ave., New York 17, N. Y.

▲ **Tishman Realty & Constr. Co.**, 445 Madison Ave., New York 22, N. Y. Owner builds. Approx. $5,000,000. 30 story OFFICE on east side of Park Ave. between 39 and 40 Sts. NEW YORK, N. Y. Emery Roth & Sons, 575 Madison Ave., New York, N. Y. archt.

M. Melnick & Co. Inc., 225 Willow Ave., New York 54, N. Y., LB $539,000. modernization of and addn. to P. S. 121, SCHOOL, 103 St. and Lexington Ave., NEW YORK, N. Y. Bd. Educ., Supt. School Bldgs., Design and Construction, 49 Flatbush Ave. Exten., Brooklyn 1, N. Y. Bids March 4. CD 2/14.

▲ **Lasker-Goldman Corp.**, 50 E. 42 St., New York 17, N. Y. CA. $1,629,235. Junior-Senior HIGH SCHOOL, WEST HEMPSTEAD, N. Y. Bd. Educ., Union Free School Dist. 27, Chestnut St. School, West Hempstead, N. Y. Bids Jan. 30. CD 1/2.

▲ **Edward N. Fusillo**, 10 Depot Plaza, White Plains, N. Y. CA. Approx. $8,000,000. 300 HOUSES on 94 acre tract on Mamaroneck Ave. WHITE PLAINS, N.Y. Gedney Park Homes, c/o contractor. Stanley Wilson, 10 Depot Plaza, White Plains, N. Y. archt.

▲ **Brusca Bros. Inc.**, 229 Yardley Way, Pittsburgh, Pa., LB $1,274,690, general constr. Junior and Senior HIGH SCHOOL, McCandless Twp. PITTSBURGH, PA. North Allegheny Joint Auth., Allegheny Co., Old Perry Hy. R. D. 7, Pittsburgh 29, Pa. Bids Feb. 26. CD 1/30.

▲† **Geo. A. Fuller Co.**, Munsey Bldg., Wash., D. C. LB $7,809,000, est. $7,800,000. Schedule H, entire project;

John A. Volpe Constr. Co., Inc., 54 Eastern Ave., Malden, Mass. LB $4,383,343. Schedule A, permanent troop facilities, nine 225 man barracks, one 165 man barracks, two 105 man barracks, regional headquarters, 3 battalion headquarters, site imprvs.;

Wildberger-Best Constr. Co., 1700 Friendship St., Baltimore, Md. LB $328,500. Schedule B, 2 bachelor officers quarters, site imprvs.;

Smith DeCorse & Christhilf, 5106 York Rd., Baltimore, Md. LB $321,200. Schedule C, 3 battalion motor repair shops, incl. site imprvs.;

Corbitt, Inc., 225 S. Front St., Reading, Pa. LB $538,500. Schedule D, central heating plant, site imprvs.;

Jos. F. Nebel Co., Inc., 2140 P St. N.W., Wash., D. C. LB $702,000. Schedule E, general purpose warehouse, warehouse addn., regimental warehouse, heating plant, site imprvs.;

Leo Butler, College Park, Md. LB $803,440. Schedule F, outside utilities;

Five Boro Constr. Corp., 89 Ridge St., New York, N. Y., and **Blitman Constr. Co.**, 101 Park Ave., New York, N. Y. LB $931,606. Schedule G, fire station, paint shop, bakery, cold storage plant, guard house, incl. site imprvs., Eng. 18-020-52-27, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., P.O. Box 1715, Baltimore 3, Md. Bids Feb. 28. CD 2/7.

▲ **J. A. Maiatico**, 806 Connecticut Ave. N.W., Wash., D.C., Owner Builds, $5,805,000, constr. 10 story, three underground levels, 450,000 sq. ft. OFFICE bldg. 1717 N. St. N.W., WASH., D. C. H. M. Zimmerman, 6019 Wooten Dr., Falls Church, Va., engr. CD 9/20.

▲ **John McShain Inc.**, 1501 N. Arlington Ridge Rd. Arlington, Va., CA, $1,300,000, constr. OFFICE bldg. at 1001 Connecticut Ave. N.W., WASH., D. C. Morris Gerwirz, 1511 K St. N.W., Wash., D. C., Jacobs Feld, 60 E. 23 St., New York, N. Y., engr., Edwin Weihe, 927 15 St. N.W., Wash., D. C., archt. CD 11/9.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Ala., Selma**—RUNWAY EXTEN.—B.A. 3/25—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., extending runways at Craig Air Force Base, Inv. 52-16 Extended date. CD 2/28.

N. C., Charlotte—HANGAR—B.A. 3/25—City, c/o City Mgr., City Hall, hangar at Douglas Municipal Airport. Plans deposit $10. CD 6/18/43.

† **Tenn., Tullahoma**—CABLE SYSTEM—B.A. 3/25—U. S. Eng., P. O. Box 2091 Tullahoma, 161-kv pipe-type cable sys., Second Increment, Arnold Engineering Development Center, Franklin and Coffee Counties, Eng. 40-126-52-41. CD 11/14/49, under Public Buildings.

† **S. C., Fort Jackson**—STACKS—B.A. 3/26—U. S. Eng., 33 Customhouse, Charleston, brick stacks, Eng 38-081-52-39.

† **Ga., Albany**—DORMITORIES, etc.—B.A. 3/27—U. S. Eng., Post Office Bldg., Savannah, Ga., airmen's dormitories, mess and administration bldg. at Turner Air Force Base. Extended date. CD 2/26.

† **Ga., Fort Benning**—B.A. 3/27—U. S. Eng., Post Office Bldg., Savannah, Upatoi Bridge and approaches, Eng 09-133-52-60. Extended date. CD 2/14.

N. C., Belmont—B.A. 3/27—Town, L. A. Brown, mayor, Belmont, street imprvs. Plans deposit $10. Platt & Davis, Durham, engrs.

† **S. C., Sumter**—UTILITIES, etc.—B.A. 3/29—U. S. Eng., 33 Customhouse, Charleston, utilities, water, sewer lines, sewage disposal plant addn., Shaw Air Force Base, Eng 38-081-52-40. Plans deposit $15. CD 9/25.

† **S. C., Sumter**—UTILITIES—B.A. 4/1—U. S. Eng., 33 Custom House, Charleston, construct utilities, sewer and water lines, sewage disposal plant addns. Eng 38-081-52-40. Plans deposit $15. Extended date. CD 3/11.

Va., Norfolk—B.A. 4/1—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, resurf galley decks at the U. S. Naval Amphibious Base, Little Creek, NOY 71300, Spec. No. 32868. Plans deposit $10.

† **Fla., Orlando**—HOUSING—B.A. 4/9—U. S. Eng., 575 Riverside Ave., Jacksonville, family housing, Pinecastle Air Force Base ENG 08-123-52-124-B. CD 13/1/51.

BIDS ASKED—BUILDINGS

N. C., North Wilkesboro—TOLL BLDG.—B.A. 3/25—Central Telephone Co., N. Wilkesboro, dial and toll bldg. addns. Plans deposit $25. Macklin & Stinson, 639-A, W. 5th St., Winston-Salem, archts.

† **Ga., Fort McPherson** — BUILDING — B.A. 3/26 — Headquarters, Office of Contg. Officer, Fort McPherson frame addn. to Building 1161, Serial NO. 09-177-52-25.

N. C., Hickory—SCHOOL—B.A. 3/26—City, Hickory, Ridgeway Negro School addns. Clemmer & Horton, Grant Bldg., archts.

▲ **Fla., Gainesville**—STUDENT HALL—B.A. 3/28—Board of Control, Tallahassee, student hall bldg., $2,106,000. Bid date changed. CD 3/10.

La., Alexandria—SCHOOL—B.A. 3/28—State, Bd. Educ., State Capitol, Baton Rouge, State School for Spastic Children, $300,000. Plans deposit $50, Barron, Heinberg & Brocato, 512 Guaranty Bank Bldg., archts.

Tenn., Memphis—HIGH SCHOOL—B.A. 3/28—Bd. Educ., 317 Poplar St., Douglass High School addn. for Negroes. Approx. $300,000. E. L. Harrison, 81 Madison Bldg., archt., Wm. Fowler, city engr. CD 1/31.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Southern Constr. Co.**, Daniel Field, Augusta, Ga., LB $1,299,497, 5 dormitories and 2 mess and admin. bldgs., Shaw Air Force Base, 38-081-52-27, SUMTER, S. C. U. S. Eng., 33 Custom House, Charleston, S. C. Bids Mar. 6.

▲† **J. Hilbert Sapp, Inc.**, P. O. Box 2053, Orlando, Fla., CA, $1,055,300, masonry construction airmen's dormitories and mess halls, Pinecastle Air Force Base, ORLANDO, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Feb. 29. CD 3/5, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Gentilly Oaks**, 2600 Poydras St., New Orleans, La. Owner Builds. $3,000,000. 283 RESIDENCES, NEW ORLEANS, LA.

▲ **The Werner Co.**, 1320 Pierre Ave., Shreveport, La. CA $2,500,000. 10 story, OFFICE annex, SHREVEPORT, LA. United Gas Co., Fairfield Ave., Shreveport, La. Awarded Mar. 7.

▲ **M. W. White Const. Co.**, Columbia, Tenn., CA. $3,000,000. PLANT mfg. di-calcium phosphate, COLUMBIA, TENN. Shea Chemical Co., Columbia, Tenn.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Mich., Detroit**—RAILROAD TRACK SPUR—B.A. 3/27—U. S. Eng., 1900 Cadillac Tower, railroad track spur, appurtenances, Detroit Tank Arsenal, Center Line, Eng. 20-064-52-57. CD 9/27/45.

† **O., Columbus**—STRUCTURAL STEEL—B.A. on or About 3/28—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., procurement, fabrication, erection of structural steel for one or two maintenance hangars at Lockbourne Air Force Base, Serial No. ENG 46-022-52-113. Plans deposit $10.

† **Illinois and Arkansas**—B.A. 4/1—U. S. Eng., P.O. Box 97, Memphis, 1, Tenn., minor repairs to revetments at several localities on banks of Ohio and Mississippi Rivers between below Cache River, Illinois (Mile 969 AHP) and Henrico, Ark. (Mile 600 AHP), Serial No. CIVENG-40-041-52-72. CD 4/27/44.

Ill., Peoria—B.A. 4/2—Greater Peoria Sanitary Dist., foot of Darst St., sanitary sewer, $125,000. CD 8/17.

† **Ill., Rantoul**—COLD STORAGE, etc.—B.A. 4/10—U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill., cold storage and metal cutting plant and I & E Building Chanute Air Force Base. CD 6/28.

† **Ill., Scott Air Force Base**—BUILD-UP BLDG.—B.A. 4/11—U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill., engine build-up building, Scott Air Force Base, Belleville. CD 6/29.

† **Ill., Chicago**—QUARTERS, etc.—B.A. 4/15—U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill. bachelor officers quarters and officers mess, O'Hare Field. CD 7/18.

BIDS ASKED—BUILDINGS

Ind., Knightstown—SCHOOL—B.A. 3/26—Bd. School Trustees, N. R. Reeves, pres., Knightstown, 2 story, brick, rein.-con., structural steel school addn., and remodeling. $300,000. Plans deposit $50. McGuire & Shook, 1400-01 Fletcher Trust Bldg., Indianapolis, 4, Ind., archts.

Ill., Yorkville—SCHOOL—B.A. 3/31—School District 15, Yorkville, 226x180x108 ft., concrete block, cut stone trim grade school. $380,000. Gregg & Briggs & Foley, 111 W. Washington St., Chicago, 2, Ill., archts. Bids date changed. CD 2/27.

Ill., Maywood—PLANT ADDN.—Bids Asked—Western Supply & Furnace Co., 1010 St. Charles Rd., 3 story plant addn. and modification. $100,000. Whalley & Gould, 3131 N. Lincoln St., Chicago, 13, Ill., archts. CD 2/13.

Mich., Detroit—POWER PLANT—Bids Asked—Hudson Motor Car Co., 12601 E. Jefferson St., 1 story, brick, steel, concrete power plant, East Jefferson St., $400,000, Body-Benjamin Assoc., Inc., 2210 Park St., engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Ill., East St. Louis—City, Alvin G. Field, mayor, East St. Louis, defeated $10,000,000 bonds, sewer improvts. and extensions. (Correction—Contracts cancelled). CD 11/9, under CA.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Paul L. Jones, 1065 Searles Ave., Columbus, O., CA. Approx. $5,000,000. 70 eight-unit APARTMENT houses and 34 four-unit APARTMENTS 1 story, concrete block and wood constr. in new development southwest of COLUMBUS, O. Haas Brothers Realty Co., Frank Rd., Columbus, O.

▲ Huber Hunt & Nichols, Speedway, Indianapolis, Ind., CA. $6,000,000, TEST CELL conversion, SOUTH BEND, IND. Studebaker Corp., South Bend, Ind., Allen & Kelley, Architects and Builders Bldg., Indianapolis, Ind., archts. Awarded Mar. 5.

▲ Geo. Sollitt Constr. Co., 109 N. Dearborn St., Chicago, 2, Ill. CA, $1,565,144, HIGH SCHOOL, paving, walks, curbs, aprons, greenhouse, RIVERSIDE, ILL. Riverside-Brookfield High School, Riverside, Ill. Bids Feb. 11, awarded Mar. 5. CD 2/19, under LB.

▲ Wyoming Land Co., 18685 Wyoming St., Detroit, Mich. Owner Builds. $4,000,000. 400 brick veneer single HOUSES, Shapiton Woods, ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Tex., Big Spring—TRAINING-OPERATIONS BLDGS.—B.A. 3/28—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, training squad headquarters and four 6,000 sq. ft. operations bldg., one 3,000 sq. ft. physiological training bldg., frame const. Plans deposit $25. Abilene Associated Architects, P. O. Box 2175, Abilene, Tex. archts. CD 4/17/51.

† Tex., Fort Worth—BARRACKS—B.A. 3/28—U. S. Eng., 1127 Texas and Pacific Bldg., construct five 3 story masonry, brick, tile, concrete airmens barracks at Carswell Air Force Base. Plans deposit $25. Easterwood & Easterwood, Bewley Bldg., archts. CD 7/19.

† Tex., Big Spring—HEADQUARTERS BLDG.—B.A. 4/1 U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, 7,500 sq. ft. frame training qr. headquarters bldg., at Air Force Base. Plans deposit $25, Butler, Brasher, Puckett & French, Big Spring, archts. CD 4/17/51.

Tex., Richardson—B.A. 4/1—City, Cont. 1, elevated steel storage tank, $35,000; Cont. 2, concrete ground storage tank and some distr. lines, $55,000; Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engrs. Bids March 4 rejected. CD 3/12 under LB.

† Kansas—B.A. 4/3—U. S. Eng., P. O. Box 61, Tulsa, Okla., clearing, grubbing, channel excava., levee constr., etc. Big Slough Cowskin Floodway, Parcel A Phase II, Arkansas River, Sedgwick Co., Eng. 34-066-52-B B. Extended date. CD 2/28.

▲ † Tex., Corpus Christi—RUNWAY—B.A. 4/9—U. S. Govt. Officer in Charge of Construction, Naval Air Advance Training Command, Naval Air Station, (1), 200x8,000 ft. runway, $1,500,000; (2), 10,325 lin. ft. taxiway, $500,000. Plans deposit $50 each; (3), addns. to airfield drainage sys. $75,000; (4), salvaging and relocation railway spur tracks, $60,000; (5), related misc. items, site clearing, grading, subgrade and sub-base, concrete and flexible pavement, runway-taxiway markings, drainage pipes, mulching, concrete drainage structures, $200,000. Cont. NOY 71643. CD 9/7.

† Nebraska—B.A. 4/10—Bureau Reclamation, Opt. Interior, Arapahoe, earthwork, structures Cambridge Lateral System, laterals 3.4 to 27.8 inclusive and sublaterals, Cambridge unit, Frenchman-Cambridge Div., Missouri River Basin Prop., from 3 mi. west of Holbrook to Oxford, Spec. DC 3681; adv ENR 3/20. CD 5/25/44.

▲ Texas—B.A. 4/10—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, construct rein.-con. spillway of Garza-Little Elm Dam and reservoir, Elm Fork of Trinity River, near Lewisville, Inv. No. CIVENG 41-443-52-45. $2,750,000. CD 6/9/44.

BIDS ASKED—BUILDINGS

† Okla., Fort Sill—NURSES QUARTERS IMPRVS.—B.A. 3/27—Post Purchasing & Contrg. Office, Fort Sill, imprv. nurses quarters, Job T-5362 and T-5363. E-34-031-52-26B. CD 9/6.

▲ Tex., Odessa—SCHOOLS—B.A. 3/31—Ector County Independent School Dist., Odessa, Travis and Lamar Elementary school addns., vocational shop, $325,000; Virgil A. Davis, Box 1847, Odessa, archt.; Dowling Elementary school, $475,000. Wilson & Patterson, 202 Majestic Bldg., Fort Worth, archts.; 1 story masonry Morningside elementary school, concrete slab fdn. $300,000. Yandell, Cowan & Love, Danciger Bldg., Fort Worth, engrs. CD 2/28.

† Mo., Fort Leonard Wood—NURSES QUARTERS—B.A. 4/1—Dpt. Army, c/o Post Engineer, Bldg. 2200, Fort Leonard Wood, alterations nurses quarters. CD 2/20.

▲ † Mo., Overland (St. Louis 14, P.O.)—PUBLICATION CENTER—B.A. 4/1—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., 1 story, 402x720 ft., steel, masonry main building, 121x126 ft. office wing, Adjutant General Publication Center, south of C.R.I. & Pac. R.R. west of Woodson Rd., Eng. 23-028-52-44, $2,500,000. Marcel Boulicault and Ralf Toensfeldt, 922 Ambassador Bldg., 411 N. & 7 St., St. Louis, Zone 1, archts. CD 1/31.

Ia., Marshalltown—HEATING PLANT—B.A. 4/9—State Bd. Control, State Office Bldg., Des Moines, Ia., heating plant ad equipment, $90,000. Stanley Engr. Co., Hershey Bldg., Muscatine, Ia., engr.

▲ Okla., Blackwell—GAS PLANT—Bids Asked—Cities Service Oil Co., Bartlesville, natural gas plant. $4,000,000. CD 12/20.

▲ Tex., Houston—RESEARCH LABORATORY—Bids Asked—Humble Oil & Refining Co., Humble Bldg., 2 story research laboratory, $2,800,000. MacKie & Kamrath, 2713 Ferndale St., archts., Howard & Johnson, Scanlan Bldg., and Walter P. Moore, 4605 Montrose Blvd., both Houston, Tex. engrs. Bids Feb. 27 rejected. CD 2/20.

SOON LETS CONTRACT—BUILDINGS

▲ Tex., Mineral Wells—HOUSING—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, soon lets construct, manage, finance 1,000 housing unit project, at Camp Wolters Air Force Base, Inv. No. Eng 41-443-52-10. $9,000,000. CD 3/3.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Al Johnson Co., 315 14 Ave. S.E., Minneapolis, Minn., Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., Western Contg. Corp., 400 Benson Bldg., Sioux City, Ia., Condon-Cunningham Co., 4229 Lafayette St., Omaha, Neb., CA. $8,364,141, Spillway, Stage II, completion of outlet works, Fort Randall Reservoir Proj. Inv. 52-59, near Lake Andes, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 15. CD 2/20, under LB.

▲† Baldwin-Lima-Hamilton Corp., 60 E. 42 St., New York, N. Y. LB $3,017,370, turbines and governors for Gavins Point Reservoir, near Yankton, Inv. 52-65. SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids March 11. CD 3/10 under LB.

▲ Brown & Root, Inc., Box 3, Houston, Tex., CA. $4,854,210, (1) water treatment plant, (2) intake and raw water pumping station, (3), concrete-lined canal, HOUSTON, TEX. City, City Hall, 900 Brazos St., Houston, Tex. Bids Feb. 27. Awarded March 6. CD 3/4, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† Brown & Root, Inc., Box 3, Houston, Tex., LB $6,891,000. 151 smokeless powder MAGAZINES, Naval Ammunition Depot, SHUMAKER, ARK. Dist. P. Wks. Officer, Eighth Naval Dist. U. S. Naval Station Building 16, New Orleans, 12, La. Bids Feb. 29. CD 3/10, under LB. (Note—cost).

▲† McKenzie & Assoc., 6419 Maple St., Dallas, Tex., LB $3,751,000, 28 to 83 explosive MAGAZINES, Naval Ammunition Depot. Cont. NOY 70830, McALESTER, OKLA. Dpt. Navy, c/o Officer in Charge of Construction, Eighth Naval Dist., Bldg. 16, Naval Station, New Orleans, La. Bids March 6. CD 2/21.

▲ Texarkana Constr. Co., 203 P & M Bldg., Texarkana, Tex. LB $1,349,000. est. $1,000,000. Tex. 48-1 and 428-, 200 brick, concrete built-up DWELLING units, PARIS, TEX. Paris Housing Auth., c/o A. M. Harrison, exec. dir., Paris, Tex. Bids Mar. 5. CD 2/5.

▲ Chemical Const. Co., 488 Madison Ave., New York, N. Y. CA. Approx. $3,000,000. CHEMICAL PLANT unit, TEXAS CITY, TEX. Texas City Chemicals, Inc., Texas City, Tex. CD 10/17.

▲ Mead & Mount Constr. Co., Railway Exchange Bldg., Denver, Colo., LB, $1,689,000, constr. public HOUSING, "Sangre de Cristo Homes" incl. 224 units, 46 buildings, 1 and 2 story, no bsmt., north of Sprague St. between Acero and Prairie Aves., PUEBLO, COLO. City of Pueblo Housing Auth., 325 Central Bldg., Pueblo, Colo. Bids Mar. 4. CD 1/23.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† Idaho—B.A. 3/27—Bureau P. Rds., Dpt. Commerce, 609½ Bannock St., Boise, Idaho

Bonner Co.—clearing, grubbing, grading, draining 8.292 mi. Priest River Rd. Proj. 6-A1, B1, Unit 1 Plans deposit $2. C. R. Salmen, acting dist. engr. CD 3/31/50.

† Wash., Seattle—MAGAZINE BLDG.—B.A. 3/28—Pub. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., 25x40 ft., rein.-con. small arms and pyrotechnic magazine bldg. at Naval Air Station, Spec. 30379.

Calif., San Lorenzo—B.A. 3/31—San Lorenzo Valley Home Assn., 453 Paseo Grande, San Lorenzo, landscape grading, surfacing etc. Community Park. Plans deposit $25. Davis L. Foulkes, 184 Hathaway Ave., San Lorenzo, archt.

Calif., Manton—HATCHERY—B.A. 4/1—State Div. Architecture, P. Wks. Bldg., Sacramento, miscellaneous work at Darrah Springs Fish Hatchery near here, Project 1 roads, ditches, sewer, clear land, etc.

† Calif., Oxnard—BUILDINGS—B.A. 4/1—U. S. Eng. 751 S. Figueroa St., Los Angeles, Calif., construct four frame bldg. at Oxnard Air Force Base, Eng. 04-353-52-47, $250,000. CD 5/21/51.

† Oregon—TRANSMISSION LINE—B.A. 4/1—Bonneville Power Admin., 827 N. E. Oregon St., Portland, Inv. 6361, clear 42.3 mi. right of way, Detroit-Albany 230 kv transmission line, Linn Co. Plans deposit $1.

Wash., Bremerton—B.A. 4/4—Bremerton Housing Auth., agent for U. S. Public Housing Auth., Bremerton, preparing site for 120 trailer houses.

Calif., East Palo Alto—B.A. 4/15—San Mateo Co., Court House, Redwood City, storm drainage project, $208,000. Plans deposit $10. Frost & Brian, 736 Main St., Redwood City, engrs.

† Idaho—B.A. 4/20—U. S. Eng., 4735 E. Marginal Way., Seattle, 4, Wash., Third Ave. fill, Albeni Falls Project, Inv. CIVENG 45-108-52-40. Sand Point. CD 9/12/44.

▲ Calif., San Diego—B.A. About 4/20—City, Civic Center, construction of Sutherland Dam, 3,000 ft. 6 ft. diam. tunnel, to form part of 60,000 ft. pipeline from dam to San Vincente reservoir, multiple-arch, rein.-con. dam on Santa Ysabel Creek east of here, $3,200,000; pipeline and tunnel, $1,800,000. CD 3/4.

BIDS ASKED—BUILDINGS

Wash., Kennewick—SCHOOL—B.A. 3/28—School District 117, Kennewick, frame Eastgate elementary school, $450,000. Plans deposit $25. E. W. Morrison, 719 2 Ave., Seattle 4, Wash., archt. CD 2/26/51.

† California—WAREHOUSES—B.A. 4/1—Bureau Reclamation, Dpt. Interior, P.O. Box 701 A, Folsom, Calif., 3 warehouses at site of Folsom Power Plants near Folsom, Spec. 200C-194.

Calif., Campbell—SCHOOL ADDNS.—B.A. 4/1—Campbell Union High School District, 251 S. Winchester Rd., Campbell Union High School addns. Plans deposit $50. Clark & Stromquist, 321 Channing Ave., Palo Alto, Calif., archt. CD 4/28/50.

Calif., Rodeo—SCHOOL ADDNS.—B.A. 4/2—Rodeo Elementary School District, Rodeo, Garretson Ave. Elementary School addns., Hillcrest School addns. Plans deposit $25. John Lyon Reid, 109 Stevenson St., San Francisco, Calif., archt. CD 8/9.

▲ Calif., Compton — SCHOOL — B.A. 4/4 — Compton Union High School Dist., 601 S. Acacia St., 1 story, frame, stucco Paramount High School, $1,000,000. Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, Calif., archts. CD 10/12.

▲ Calif., San Francisco—HOSPITAL—B.A. 4/5—Permanente Foundation, Broadway and West MacArthur Blvd., Oakland, 210-bed hospital in Anza Vista District near Geary O'Farrell and Lyon Sts., $2,300,000. Wulff & Phillips, Pearson-Fourth Ave., Bldg., Portland, Ore., archts. Extended date. CD 3/13.

Wash., Seattle—HOUSES, etc.—B.A. 4/9—Board of P. Wks., 512 City-County Bldg., Seattle, Zone 4, 36 houses, commissary bldg. and installation of facilities at Diablo, $495,000. E. R. Hoffman, city light supt.

† Calif., Camp Beale—HEATING PLANT, etc.—B.A. 4/15—U. S. Eng., Wright Bldg., Sacramento, central heating plant, steam distr. sys. etc. for hospital area, Spec. 1579. Plans deposit $50. Extended date. CD 2/21.

SOON LETS CONTRACT—BUILDINGS

Calif., Gilroy—WAREHOUSE—Felice & Perelli Canning Co., Lewis St., Gilroy, soon lets contract, selected list of bidders, warehouse. MacPerkins 110 Sutter St., San Francisco, archt.

Calif., San Jose—PLANT ADDN.—International Mineral and Chemical Corp., 1931 S. Monterey Rd., San Jose, soon lets contract, 3 story plant addn.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Idaho Portland Cement Co., Inkom, Idaho, LB, $480,000, Schedule 1, 160,000 barrels of bulk portland cement for construction of Palisades dam and power plant, Palisades Project, DS-3622, IDAHO Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Mar. 6. CD 2/27.

▲† Donovan-Foley-Winston-Lytle-James, 1725 Carroll Ave., St. Paul, Minn., LB, $8,601,246, hydroelectric power house for Albeni Falls Dam, Priest River, CIVENG 45-108,52,29. IDAHO U. S. Eng., 4735 E. Marginal Way Seattle, 4, Wash. Bids Mar. 6. CD 1/17.

▲† Ferranti, Ltd., Hollingswood, Lancashire, England, LB $1,055,300, nine 56,500 kva transformers for McNary Dam, CIVENG 45-164-52-62. OREGON. U. S. Eng., city-county Airport, Walla Walla, Wash. Bids March 6.

NEVADA—State Hy. Dpt., State Office Bldg., Carson City.

Dodne Const. Inc., N. Maine St., Fallon, Nev., CA. $92,278, construct portion of State Hy. Sys., from 2 mi. north of Lovelock and junction with FAS 696 to 7 mi. south of Lovelock and junction with FAS 691 along Fairview Rd. and S. Meridian Rd. Rte. Sects. FAS 693 and FAS 700, Control Sects. PE-14 and PE-22, Proj. Nos. S 693 (2) and S 700 (1), State Hy. Cont. No. 820, Pershing Co. Bids Mar. 6.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento.

Lee J. Immel, 3030 San Pablo Ave., San Pablo, Calif., LB, $64,717, paving, road construction .7 mi. between Willow Road and First St., Rodeo.

Baun Constr. Co., P.O. Box 1281, Fresno, Calif., LB, $161,300 road grading, surf. 6 mi. etc. near Poplar, Tulare Co. Bids Mar. 5. CD 2/13.

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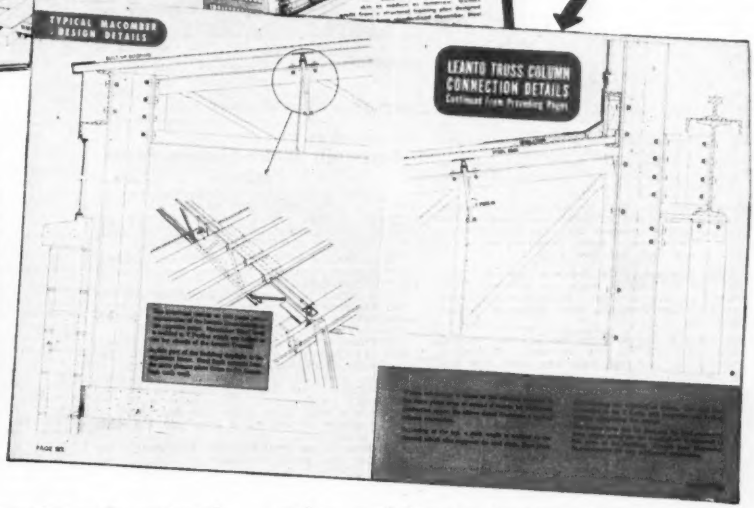

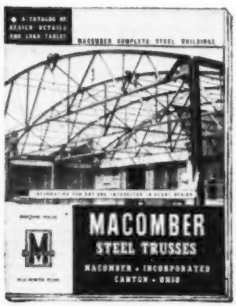

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CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Calif.

Peter Kiewit Sons' Co., 345 Kieways Ave., Arcadia, Calif., LB, $92,618 road construction 8.1 mi. Barstow and Daggett, San Bernardino Co.

Baker & Pollock, 211 N. Olive St., Ventura, Calif., LB $62,404, surf. 2.3 mi. etc. Oakview Ave., near Ventura, Ventura Co. Bids Mar. 6. CD 2/13.

Lee & Neal, 236 State St., Santa Barbara, Calif., LB, $154,638, outfall sewers 1 and 2 revise existing force main at Santa Barbara College, GOLETA, CALIF. Santa Barbara College, University of California, Goleta, Calif. Bids Mar. 4 CD 2/13.

▲† Sharp & Fellows Contg. Co., 533 Central Bldg., Los Angeles, Calif., LB, $1,100,540, relocate River Road Sycamore Creek Gauging Station, Pine Flat Proj., Spec. 1618, CALIFORNIA U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Mar. 7. CD 2/13.

† Carl N. Swenson Co., 1095 Stockton Ave., San Jose, Calif., LB, $256,905, auxiliary equipment for 8 ft. supersonic wind tunnel, Inv. A 7575, MOFFETT FIELD, CALIF. National Advisory Comn. for Aeronautics Ames Laboratory Moffett Field, Calif. Bids Mar. 4. CD 2/12.

Beason & Taylor, 2240 North Parkway Dr., El Monte, Calif., LB, $97,339, Murray Canyon trunk sewer from Mission Valley Rd. to city boundary, SAN DIEGO, CALIF. City, City Hall, San Diego, Calif., CD 2/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Ellis W. Barker, Ness Bldg., Salt Lake City, Utah, CA, $1,380,300, HIGH SCHOOL and Elementary SCHOOL CHICO, CALIF. Bd. Educ., Chico, Calif. Bids Feb. 14, awarded Feb. 29. CD 2/26, under LB.

Park Manor, Inc., c/o M. Rich, archt., 5128 E. 54 St., Seattle, Wash., Day Labor, $400,000, 7 story 72x104 ft., APARTMENT at 535 13 Ave. N., SEATTLE, WASH. P. Hostmark, Lloyd Bldg., Seattle, 1, Wash., engr.

Fred S. Macomber, 8818 Melrose Ave., Los Angeles, Calif., LB, $600,000, 106 HOUSING Units, Call B-5, BAKERSFIELD, CALIF. Kern County Housing Auth., 517 Roberts Lane, Bakersfield, Calif. Bids Mar. 5. CD 2/25.

Theo. G. Meyer & Son, 200 Quint St., San Francisco, Calif., LB, $796,107, Burlingame Intermediate SCHOOL, BURLINGAME, CALIF. Burlingame Elementary School District 701 Paloma Ave., Burlingame, Calif. Bids Feb. 25. CD 12/8.

Robert McCarthy Co., 1050 Kirkham St., San Francisco, Calif., LB, $718,000, HOUSING project north of Harris and east of Prospect Sts., Cal 25-1 EUREKA, Calif. Eureka Housing Auth., Henderson and Spring Sts., Eureka, Calif. Bids Mar. 3. CD 2/7.

▲ Kaiser Engineers, 1924 Broadway, Oakland, Calif., CA Total $65,000,000, design and construct, STEEL PLANT expansion at Kaiser Fontana Plant, FONTANA, CALIF. Kaiser Steel Co., 1924 Broadway, Oakland, Calif.

Ralph Larsen & Son, 64 South Park St., San Francisco, Calif., LB, $344,313, new city HALL, PALO ALTO, CALIF. City, City Hall, Palo Alto, Calif. Bids Mar. 6. CD 2/13.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ Man., Winnipeg—MESS—B.A. 4/8—W. J. Malhausen, c/o Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, officers mess Scheme B and N.C.O.'s mess Scheme A at R.C.A.F. Station, $1,100,000. Plans deposit $100. CD 12/28.

BIDS ASKED—BUILDINGS

▲ Ont., Toronto—RESEARCH—B.A. 3/24—Mathers & Haldenby, archts., 15 St. Mary St., Toronto, Ont., 5 story, with two bsmnts., rein.-con. frame, brick, stone medical research bldg., Charles H. Best Institute, College St., for University of Toronto, Simcoe Hall, Toronto, Ont. Approx. $1,500,000. Bids 9/5 rejected. CD 6/1.

▲ Que., Ste. Foye—HOUSING—B.A. 3/25—M. P. McAndrew, engr. Central Mortgage & Housing Corp., 1247 Guy St., Montreal, 200 army housing units at Gomin and Fallon Rds., $2,000,000. Plans deposit $100.

U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

Puerto Rico, San Juan—BULK STORAGE—B.A. 4/15—U. S. Eng., 575 Riverside Ave., Jacksonville, Fla., construct bulk storage and aircraft refueling sys., Ramey Air Force Base, ENG 08-123-127B.

ALASKA

BIDS ASKED—BUILDINGS

† Alaska, Kodiak—SCHOOL, BARRACKS—B.A. 4/10—Pub. Wks. Officer, 7th Naval Dist., Kodiak, rein.-con. school, two-story steel frame barracks, 1 story rein.-con. electronics bldg., rein.-con. addn. to laundry; 17,000 ft. 18 in. c.i. water supply main at Naval Station, Spec. 31604.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: April 7, 1952

Leanto Addition on West Side Hangar No. 1

THE PORT OF NEW YORK AUTHORITY
TETERBORO AIRPORT
CONTRACT TA-110.001

Sealed proposals for the construction of a leanto addition on the west side of Hangar No. 1 at Teterboro Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:15 A.M., Monday, April 7, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, March 20, 1952

Bids: June 24, 1952

Roxburgh Hydro-Electric Power Project

NEW ZEALAND GOVERNMENT
MINISTRY OF WORKS
COMPLETION OF CONSTRUCTION OF DAM, SPILLWAY, POWER HOUSE AND OTHER ASSOCIATED WORKS

It is desired to engage a civil engineering contracting firm to complete construction of the Roxburgh Project.

The work is of considerable magnitude and tenders will be considered only from contractors of world-wide reputation in this class of work.

Formal tender documents will be available to interested contractors from the Secretary, Tenders Board, Ministry of Works, Box 8015, Government Buildings, Wellington, New Zealand, towards the end of April, 1952.

Tenders will close with the Secretary of the Tenders Board at 4 p.m. on Tuesday, June 24th, 1952.

Copies of a preliminary statement describing the main features of the project are available now at the New Zealand Government Trade Commissioner's Office, Dupont Circle Building, 1346 Connecticut Ave., N.W., Washington 6, D. C., and also at the New Zealand Government Travel Commissioner's Office, 153 Kearny St., San Francisco, California. This preliminary information is given now so that contractors desiring to submit tenders may make early arrangements to visit the site and gain an appreciation of local conditions.

Applications from bona fide contractors for formal documents to be despatched to them as soon as they are available for issue should be made to the Secretary of the Tenders Board at the above address.

Bids: March 26, 1952

Soil Explorations—Spec. SM-33

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on March 26, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, CATSKILL SECTION, SUBDIVISION 3, NO. KINGSTON TO WHITESPORT, TOWNSHIPS OF ULSTER AND ROSENDALE, ULSTER COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-33

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, 1, N. Y.
(b) J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $24,500.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,225.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3691) will be received at Loveland, Colorado, until April 17, 1952, for furnishing labor and materials for: Completion of Pole Hill Power Plant and Switchyard and Flatiron Power and Pumping Plant and Switchyard, Estes Park-Foothills Power Aqueduct, Colorado-Big Thompson Project, Colorado. Location: Approximately 14 miles and 9 miles, respectively, west of Loveland, Colorado. Principal items are: Excavation, 3,100 cu.yds.; furnishing and handling cement, 4,800 barrels; furnishing and placing reinforcement bars, 362,000 lbs.; concrete, 3,490 cu.yds.; furnishing and installing pipe, 114,000 lbs.; installing metalwork, 473,000 lbs.; furnishing and installing electrical wire, cable, and conduit, 210,000 lin.ft.; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, Loveland, Colorado; or Building 53, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-238 for furnishing labor and materials and performing all work for the construction of Julesburg substation, Transmission Division, Colorado, Missouri River Basin Project, will be mailed to P. O. Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 A.M., Mountain Standard Time, April 1, 1952, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming. Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all other $0.75 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

OFFICIAL PROPOSALS

Bids: April 15, 1952

Sewerage Construction Work

BOROUGH OF EDGEWATER

PUBLIC NOTICE is hereby given that sealed proposals for furnishing labor and materials for the construction as part of the sewerage system of the Borough of Edgewater, of a sewage treatment and disposal plant and additions to sewerage system, will be received by the Mayor and Council of the Borough of Edgewater, Bergen County, New Jersey, at the Council Chambers of the Municipal Building on the 15th day of April, 1952, at 7:00 o'clock P. M., as follows:

Contract #1—Treatment and Disposal Plant
Contract #6—Four Pump Houses
Contract #2—Electrical Work—Treatment Plant
Contract #7—Electrical Work—Four Pump Houses

Copies of the plans and specifications may be seen at the Office of the Borough Clerk in the Municipal Building, Edgewater, New Jersey. Copies of the plans and specifications may be obtained by the payment of $50.00 in cash or certified check, at the office of Roscoe P. McClave, Consulting Engineer, 600 Gorge Road, Cliffside Park, New Jersey, by bidders during business hours from noon March 10, 1952 to noon April 4, 1952, after which date no further plans and specifications will be obtainable. The payment of $50.00 for the plans and specifications is not returnable.

The Mayor and Council hereby reserves the right to reject any and all bids.

PETER F. O'BRIEN,
Borough Clerk

March 4th, 1952

Bids: April 1, 1952

Route 4 Parkway, Section 9C (2)

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4 PARKWAY, SECTION 9C (2)
Construction of Route 4 Parkway, Section 9C (2), from Burke Parkway to Route 29, Grading, Township of Union, Union County; Federal Project No. U-188(25). Length 0.695 miles. The principal items of construction are:

Estimated:
6,550 cu. yds. Roadway Excavation—Earth
18,350 cu. yds. Wet Excavation
372,700 cu. yds. Borrow Excavation
3,404 lin. ft. Reinforced Concrete Pipe
316 lin. ft. Cast Iron Pipe
748 lin. ft. Corrugated Metal Pipe
215 cu. yds. Culvert, Class B Concrete

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, Tuesday, April 1, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE. The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 268 North Broad Street, Elizabeth, New Jersey, and State Employment Service, 28 Union Avenue, Irvington, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $1.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: April 7, 1952

Electrical Installation

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY

NEWARK AIRPORT
RUNWAY A AND TAXIWAY T2

CONTRACT NA-220.003

Sealed proposals for the electrical installation and the construction of a switch house for Runway A and Taxiway T2 at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:00 A.M., Monday, April 7, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, March 20, 1952

Bids: April 7, 1952

Water Mains

Sealed bids will be received until 11:00 A.M., E.S.T., April 7, A.D., 1952, in the office of the Town Clerk, Lauderdale-By-The-Sea, Florida for WATER MAINS.

Plans, specifications and bidding blanks may be obtained from the office of the Town Clerk.

A deposit of $25.00 for plans and specifications and of $15.00 each for additional copies of plans or specifications will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10 days of the opening of bids.

A certified check or cashier's check for 2% of the total amount of the bid, made payable to Town of Lauderdale-By-The-Sea, Florida shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

Any bid accepted by the Owner shall be subject to the Owner's ability to validate and sell indentures or certificates in an amount sufficient to cover the overall cost of the water system in the Town of Lauderdale-By-The-Sea, Florida.

The Owner reserves the right to reject any or all bids.

CAROLE GARLAND
Town Clerk

Bids: April 17, 1952

Intercepting Sewers & Sewage Treatment Plant

Sealed proposals will be received at 483 Mill Street, Catawissa, Columbia County, Pennsylvania, until 2:00 P.M., E.S.T., April 17, 1952 by H. O. Sharpless, Secretary of the MUNICIPAL SEWER AUTHORITY OF THE BOROUGH OF CATAWISSA, for furnishing all necessary labor, materials and equipment, and performing all work for the construction of INTERCEPTING SEWERS and a SEWAGE TREATMENT PLANT, and will be publicly opened and read at the Town Hall, Catawissa, Pennsylvania at 2:30 P.M., E.S.T., April 17, 1952. Separate proposals will be received upon three (3) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check in the amount of not less than seven and one-half (7½) per cent of the bid total, or a bid bond in amount not less than ten (10) percent of the bid total.

Copies of the Contract Documents, including Drawings and Specifications will be on file for inspection purposes only, at the office of H. R. Berninger, Solicitor of the MUNICIPAL SEWER AUTHORITY OF THE BOROUGH OF CATAWISSA at 175 Center Street, Bloomsburg, Pennsylvania; they also may be seen at the office of Gannett Fleming Corddry & Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania, from whom they may be obtained, upon deposit of the following amounts for each set:

Contract One—General Construction of a Sewage Treatment Plant and Intercepting Sewers, $25.00.
Contract Two—Electrical Work in Connection with Construction of a Sewage Treatment Plant, $10.00.
Contract Three—Plumbing work in Connection with Construction of a Sewage Treatment Plant, $10.00.

Full refund will be made to actual bidders for return of one of each set in good condition within ten (10) days after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty (50) per cent of deposit.

Gannett Fleming Corddry & Carpenter, Inc., Engineers,
600 North Second Street
Harrisburg, Pennsylvania
Municipal Sewer Authority of The Borough of Catawissa, Columbia County, Pennsylvania

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Bids: April 7, 1952

Steel Tank and Tower

Sealed bids will be received until 11:00 A.M., E.S.T., April 7, A.D., 1952, in the office of the Town Clerk, Lauderdale-By-The-Sea, Florida for ELEVATED STEEL TANK AND TOWER—250,000G.

Plans, specifications and bidding blanks may be obtained from the office of the Town Clerk.

A deposit of $25.00 for plans and specifications and of $15.00 each for additional copies of plans or specifications will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check or cashier's check for 2% of the total amount of the bid, made payable to Town of Lauderdale-By-The-Sea, Florida shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

Any bid accepted by the Owner shall be subject to the Owner's ability to validate and sell indentures or certificates in an amount sufficient to cover the overall cost of the water system in the Town of Lauderdale-By-The-Sea, Florida.

The Owner reserves the right to reject any or all bids.

CAROLE GARLAND
Town Clerk

(Continued on following page)

OFFICIAL PROPOSALS

Bids: April 15, 1952

Street Car Track Rail Removal

RR-52
DEPARTMENT OF PUBLIC WORKS,
CITY OF DETROIT, MICHIGAN

Separate sealed proposals for the removal of abandoned streetcar tracks and the refilling and resurfacing of the resulting trench for each of the streets hereinafter listed addressed to the OFFICE OF THE CITY ENGINEER of the City of Detroit, will be received at its office, 30TH FLOOR GUARDIAN BUILDING, Detroit 26, Michigan, until 2:00 p.m., Detroit Time, on the date stated below, at which time they will be publicly opened and read aloud. Any proposal received after the specified time will be returned to the bidder unopened. Any bidder may bid on all or any one street, as separate contracts will be entered into for each street.

The work consists of the removal of abandoned streetcar rails and the backfilling of the resulting trenches with concrete.

ADVERTISEMENTS OF GROUP RR-52-1
—BIDS TO BE OPENED TUESDAY, APRIL 15, 1952

PW-2076 HARPER Concord to Van Dyke
PW-2077 HENRY Wabash to 5th Street
PW-2078 MADISON Russell to Chene
PW-2079 WOODMERE Fort to Chamberlain

The Contract Documents including the Notice to Bidders, Form of Proposal and Contract, Plans and Specifications may be examined and obtained at the Office of the City Engineer, 30th Floor Guardian Building, during business hours.

The proposal for each street for which a bid is submitted should be accompanied by a certified check or satisfactory bidder's bond in an amount not less than $1,000.00 for each street as security for the acceptance of the contract. Bidders submitting proopsals for more than one street may combine the individual amounts required in one check or bond.

The removed rail will become the property of the Contractor.

After the scheduled closing time for receipt of bids, no proposal may be withdrawn for at least 30 days.

The City of Detroit reserves the right to waive any informality in any bid, or to accept any bid, or to reject any or all bids, should it be deemed for its best intrest so to do.

CITY OF DETROIT
CARL D. WARNER
COMMISSIONER OF PUBLIC WORKS
G. R. THOMPSON
CITY ENGINEER

Bids: April 16, 1952

Construction Project, New Jersey

Notice is hereby given that sealed proposals will be received by the State of New Jersey for work in connection with a construction project encompassing a Medical-Surgical-Reception Building; a Laundry Building; a Kitchen-Dining Building; a Boiler House; Connecting Tunnels and Miscellaneous Buildings for the Fourth Mental Hospital for the State of New Jersey at Winslow Township, Camden County, New Jersey.

Bids will be received in the office of the Director, Division of Purchase & Property, Room 318, State House, Trenton 7, New Jersey between the hours of 1 P.M. and 2 P.M. Eastern Standard Time on Wednesday, April 16, 1952, and will be opened and read in public immediately thereafter. No bid received after 2 P.M. will be accepted.

Separate bids will be received for:

General Construction Work
Structural Steel & Miscellaneous Iron Work
Plumbing Work
Potable Water & Fire Protection Lines
Heating, Ventilating & Air Conditioning Work
Electrical Work
Electric Passenger Elevators
Hydraulic Freight Elevator
Food Service Equipment
Laundry Machinery & Equipment
Storm & Site Drainage Work

Bids must be made on prepared "Form of Proposal" and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than five (5) per cent of the total base bid or by a bid bond in like amount.

Bids not submitted on prepared "Form of Proposal" sheets or enclosed in other than specially addressed envelopes will be considered informal and will be rejected.

Form of Proposal, Instructions to Bidders, Contract Documents, Drawings and Specifications may be examined at offices of the Architect, Epple & Seaman and Leslie M. Dennis, Associate Architect, 901 Broad Street, Newark, New Jersey or at the office of the Director, Division of Purchase & Property, State House, Trenton, New Jersey.

The Director reserves the unrestricted right to accept or reject any or all bids or to waive informalities therein.

The successful bidders will be required to qualify for surety bond in full amount of contracts, of a company authorized to do business in the State of New Jersey.

No bid shall be withdrawn for a period of two (2) calendar months subsequent to opening of bids, without the consent of the State of New Jersey.

One set of complete documents for the proposed work may be obtained upon application to the Architect on deposit of a certified check in the amount of $100.00 drawn to the order of the Treasurer of the State of New Jersey. This deposit will be refunded to any bidder upon returning such set in good condition within ten (10) days after opening bids.

Additional sets of plans and specifications may be obtained from the Architect on deposit of a certified check in the amount of $62.80 drawn to the order of the Treasurer of the State of New Jersey. This amount will not be refunded.

A financial and Experience Questionnaire must be submitted to the Director of the Division of Purchase and Property, prior to submission of bids.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director

Bids: April 2, 1952

Contract No. 20 — Maintenance Building and Additional Toll Plaza Facilities

THE DELAWARE MEMORIAL BRIDGE

Sealed proposals for construction of Maintenance Building and Additional Toll Plaza Facilities for "The Delaware Memorial Bridge" over the Delaware River near Wilmington, Delaware, will be received by the Delaware State Highway Department, at the office of the Director, Delaware Crossing Division, Administration Building, Delaware Memorial Bridge, Delaware, until 12 o'clock noon, Eastern Standard Time, April 2, 1952, at which time and place said proposals will be publicly opened and read.

The entire work involves the following:

(a) Construction of a one-story maintenance building approximately 113 by 107 feet overall, including relocation of existing gas tank and pump; automotive lift; lubrication equipment; sand storage hopper; plumbing, lighting, heating and air conditioning facilities; and other work incidental thereto.

(b) Reconstruction at Toll Plaza, including the reconstruction and extension of utility tunnel; construction of two 16 by 46-foot reinforced concrete roadway slabs; including excavation preparation of subgrade and construction of subbase; construction of two reinforced concrete toll booth islands; installation of roadway treadle frames and curb boxes; and other work incidental thereto.

(c) Construction of two metal and glass toll booths, with connecting metal canopy.

(d) Furnishing and installing toll collection and registering equipment.

(e) Furnishing and installing roadway treadle and counters.

Work on this Contract shall begin promptly after execution of the Contract. It shall be completed in accordance with the following schedule:

Work under item (b) above..July 1, 1952
Work under items (c), (d), and (e) above .....August 1, 1952
Entire Contract .....October 1, 1952

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check to the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the Plans and two copies of the Specifications may be obtained from the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York, after March 12, 1952, upon payment of $10.00.

Any prospective bidder who has made such a deposit may secure extra blueprint copies of the Plans upon payment of 50 cents per drawing and an extra copy of the Specifications upon payment of $2.50 per copy.

Plans and Specifications need not be returned to the Engineers, and the above payments will not be refunded.

The Plans and Specifications and other contract documents may be examined at the office of the Engineer, Howard, Needles, Tammen & Bergendoff, or at the Engineers' project office located north of and adjacent to the west abutment of the Delaware Memorial Bridge in the State of Delaware.

State Highway Department
by: J. Gordon Smith, Chairman
W. A. McWilliams, Director
Delaware Crossing Division
March 3, 1952

Bids: April 2, 1952

Delaware Memorial Bridge

CONTRACT NO. 18
NEW CASTLE INTERCHANGE RAMPS AND TOLL PLAZA MODIFICATION

Sealed proposals for construction of access ramps at New Castle Overpass, the widening of pavement and the extension of parking areas at the toll plaza for "The Delaware Memorial Bridge" over the Delaware River near Wilmington, Delaware will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Administration Building, Delaware Memorial Bridge, Wilmington, Delaware, until 12 o'clock noon Eastern Standard Time, April 2, 1952, at which time and place said proposals will be publicly opened and read.

The work involves the following principal quantities:

Selected Permeable Material	5,500 cu.yds.
Select Material	2,800 cu.yds.
Fine Aggregate for Backfill	300 tons
Earth Excavation	20,100 cu.yds.
Cement Concrete Masonry	60 cu.yds.
Cement Concrete Pavement	1,830 cu.yds.
Wire Mesh Reinforcement	640 squares
Waterbound Macadam	1,235 tons
Bituminous Cement Concrete	660 tons
Topsoil	22,500 cu.yds.
8-Inch Perforated Underdrains	1,500 lin. ft.

Work on Contract 18 shall begin promptly after the execution of the Contract. It shall be completed in accordance with the following schedule:

Cement concrete pavement and shoulders in the toll area, August 1, 1952.
Entire Contract, September 1, 1952.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms furnished by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check for a sum equal to at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the Plans and two copies of the Specifications may be obtained from the Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. after March 10, 1952 upon payment of $10.00.

Any prospective bidder who has made such a deposit may secure extra blueprint copies of the Plans upon payment of 50 cents per drawing and an extra copy of the Specifications upon payment of $2.50 per copy.

Plans and Specifications need not be returned to the Engineers, and the above payments will not be refunded.

The Plans and Specifications and other contract documents may be examined at the office of the Engineer, Howard, Needles, Tammen & Bergendoff, or at the Engineers' project office located north of and adjacent to the west abutment of the Delaware Memorial Bridge in the State of Delaware.

State Highway Department
by: J. Gordon Smith, Chairman
W. A. McWilliams, Director
Delaware Crossing Division
March 1, 1952

READ THE OFFICIAL PROPOSAL COLUMNS OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: March 26, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on WEDNESDAY, MARCH 26, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Cont. No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 353 Broadway, Albany, N. Y.				
Sara.	D.A. 52-1	West Milton-Atomic Energy Commission Access Road Proj. A.A. 1	0.60	Found. Crse. Gravel	$1,000 Plans $10	$18,000
		DISTRICT No. 2				
		Lacy Ketchum, District Engr., 109 No. Genesee St., Utica 1, New York				
Mont.	M.T. 52-5	New York State Thruway—The Mohawk Section—Subdivision 16 (Se. Amsterdam-Pattersonville)	3.12	9" Cem. Conc. Pavt. 2 @ 25' Wide	60,000 Plans $15	1,020,000
Oneida	M.T. 52-6	New York State Thruway—The Mohawk Section—Subdivision 4 (Oneida-Verona Sta.)	3.56	9" Cem. Conc. Pavt. 2 @ 25' Wide=3.05 Mi. Misc. Work=0.51 Mi.	70,000 Plans $15	1,311,000
		DISTRICT No. 3				
		William Robinson, Dist. Engr., Weigh Lock Bldg., Syracuse, New York				
Seneca	O.T. 52-5	New York State Thruway—The Ontario Section—Subdivision 1 & 2 (Ontario Co. Line—Tyre)	9.23	9" Cem. Conc. Pavt. 2 @ 25' Wide=9.06 Mi. Misc. Work=0.17 Mi.	180,000 Plans $25	3,349,000
4 Counties 2 Cities	FARC 52-13	Installation of Automatic Recording Traffic Counters in District No. 3 Proj. SWHP 1(8)	....	Installation of 9 Automatic Record. Traffic Counters	1,200 Plans $10	21,060
		DISTRICT No. 5				
		C. R. Watens, Dist. Engr., 65 Court St., Buffalo				
Erie	GISP 52-1	Grand Island State Parkway (West River Parkway) G.I.S.P. 59-1, G.I.S.P. 51-2P, G.I.S.P. 51-3	8.60	Roadside Improvement	2,300 Plans $10	39,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endored on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3680) will be received by Bureau of Reclamation, Superior, Nebraska, until April 8, 1952, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, concrete canal lining, and structures for Courtland Canal, station 772+00 to station 1503+00, Superior Courtland Unit, Bostwick Division, Nebraska-Kansas, Missouri River Basin Project. The work is situated near Superior, Nebraska. Principal items are approximately: Excavation 2,346,000 cu.yds.; concrete in structures 9,700 cu.yds.; concrete in canal lining 7,000 cu.yds.; timber in structures 258 M.b.m.; gates and metalwork 37,000 lbs.; and other work. Time allowed for completion will be 650 days. For particulars, address Bureau of Reclamation, Superior, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3683) will be received at Yuma, Arizona, until April 10, 1952, for furnishing labor and materials for: Earthwork, concrete canal lining, and structures, Mohawk Canal, station 2053+72.16 to station 2474+68.83 and Radium Hot Springs Flood Protection System, station 170+70 to station 584+50, Wellton Mohawk Division, Gila Project. Location: About 14 miles northeast of Wellton, Arizona. Principal items are: Excavation for channels and dikes 1,160,000 cu.yds.; concrete in canal linings 2 inches and 2½ inches thick 6,010 cu. yds.; furnishing and handling cement 9,750 barrels; furnishing and erecting treated and untreated timber 22.0 M.b.m.; furnishing and installing miscellaneous metalwork, slide gates, and radial gates 34,660 lbs.; and other work. Completion time 270 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 53, Denver Federal Center, Denver, Colorado.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3681) will be received at Arapahoe, Nebraska, until April 10, 1952, for furnishing labor and materials for: Earthwork and structures, Cambridge Lateral System, laterals 3.4 to 27.8, inclusive, and sublaterals, Cambridge Unit, Frenchman-Cambridge Division, Missouri River Basin Project. Location: From 3 miles west of Holbrook, Nebraska, to Oxford, Nebraska. Principal items are: Excavation for canal, 145,000 cu.yds.; concrete in structures 1,420 cu.yds.; furnishing and handling cement 2,260 bbls.; furnishing and placing reinforcement 106,000 lbs.; furnishing and installing concrete or metal Parshall flumes, 34 flumes; furnishing, and laying various sizes and types of precast concrete culvert pipe 10,260 lin.ft.; and other work. Completion time 330 and 420 days. For particulars, address Bureau of Reclamation, Araphoe, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3682) will be received at Klamath Falls, Oregon, until April 9, 1952, for furnishing labor and materials for: Earthwork and structures, Lost River Channel improvements, station 0+00 to station 413±, West Canal enlargement, station 0+00 to station 30+50 W-1 lateral, station 25+37.2 to station 168+20, Langell Valley, Tule Lake Division, Modoc Unit, Klamath Project. Location: 35 to 55 miles southeast of Klamath Falls, Oregon. Principal items are: Excavation, common, for channel, canal, and lateral 757,500 cu.yds.; furnishing and erecting treated and untreated timber in structures 65.2 M.b.m.; furnishing and driving timber piles 2,255 lin.ft.; furnishing and laying various diameters corrugated metal pipe, 3,280 lin.ft.; furnishing and installing metal slide gates 2,700 lbs.; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, Klamath Falls, Oregon; or Building 53, Denver Federal Center, Denver, Colorado.

OFFICIAL PROPOSALS

Bids: March 26, 1952

Soil Explorations—Spec. SM-32

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on March 26, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE EASTERN THRUWAY CONNECTION, PART 1, TOWNSHIPS OF PITTSFORD & PERINTON, MONROE COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-32

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) A. R. Mulligan, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $21,250.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,063. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3680) will be received by Bureau of Reclamation, Casper, Wyoming, until April 15, 1952, and then publicly opened for furnishing labor and materials and performing all work for the construction of Guernsey Tap-Guernsey 115-kilovolt transmission line, Missouri River Basin Project, Wyoming. The work is situated near Guernsey, Wyoming. The transmission line will be 115,000-volt, 3-phase single-circuit, wood-pole, H-frame type, and will extend approximately 4.3 miles from a tap on the Casper-Gering line to a point near the Guernsey Hydro-Electric Plant. The line will have overhead ground wires, and all materials, except conductors, are to be furnished by the contractor. Desired time for completion is 120 days. For particulars, address Bureau of Reclamation, Casper, Wyoming; or Building 53, Denver Federal Center, Denver, Colorado.

Department of Commerce, Bureau of Public Roads, March 6, 1952. SEALED BIDS will be received at the office of the Forest Ranger, U. S. Forest Service, Nenzel, Nebraska until 11:00 a.m., M.S.T., APRIL 11, 1952, for Nebraska Forest Highway Project NO. 4-B, Part 2 (Roadwork), Nebraska National Forest, Cherry County, Nebraska. 2.809 miles Grading, Selected Borrow Base Course, Gravel Surface Course, and other work on the Niobrara Road beginning about 7.5 miles south of Nenzel. The approximate quantities of the more important items are 84,074 cu. yd. Excavation, 3,000 tons Gravel and 96 cu. yd. Concrete. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above, or Bureau of Public Roads, P. O. Box 338, Albert Pike Station, 115 Nevada Street, Hot Springs, Arkansas, or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. Plans and specifications may be inspected at the office of the Regional Forester, Rocky Mountain Region, Post Office Building, Denver 2, Colorado, or at the office of the Forester in Charge, Nebraska National Forest, Halsey, Nebraska. H. J. Spelman, Division Engineer.

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P-3630, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

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COST ENGINEER, foreign employment. Well known international contractor. 3 to 5 years experience. Prefer graduate civil engineer. P-3568, Engineering News-Record.

CPA—THOROUGHLY familiar with construction accounting; steady, top salary for top man. Newark, New Jersey Territory. P-3547, Engineering News-Record.

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STRUCTURAL ENGINEER: Experienced in steel design industrial and commercial buildings by a leading Middle-West structural steel fabricating company. Excellent opportunity for qualified man. Permanent position, hospitalization, group insurance and pension plans. P-3473, Engineering News-Record.

TOWN IN Southern New England, population 40,000, seeks qualified Engineer to take complete charge of administration and operation of new Sewage Treatment Plant. Should have C E Degree with sanitary major or its equivalent and at least five (5) years experience in sewage plant operation. Send brief resume of education and experience. Selected candidates will receive interviews. Salary open. East Providence Sewer Commission, Town Hall, East Providence, R. I.

WANTED—CIVIL Engineer graduate, some experience in the concrete paving field, preferred, by long established engineering promotional and educational organization, to be representative in the Central New York State area. Age 25 to 40. Give resume of education, engineering experience, and salary requirements in reply. P-3599, Engineering News-Record.

WANTED—CIVIL Engineer graduate, some highway experience desirable, by long established engineering promotional and educational organization, to be a representative in the Southern New Jersey area. Age 25 to 40. Give resume of education, engineering experience, and salary requirements in reply. P-3606, Engineering News-Record.

WANTED—GRADUATE Civil Engineer, some experience in the structural and housing field preferred, by long established engineering promotional and educational organization, to be a representative in the metropolitan New York area. Age 25 to 40. Give resume of education, engineering experience, and salary requirements in reply. P-3602, Engineering News-Record.

(Continued on opposite page)

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but SEARCHLIGHT SECTION ASSUMES no responsibility for errors or omissions.

Aberthaw Co., The 108, 109
Air Compressor Rental Co. 110
Albert Pipe Supply Co. 110
Albro Steel Co. 107
American Machinery Foundry Co. .. 105
Ameriux Steel Products Corp. 109
Atlantic Piling Corp. 109

Bass Engineering & Construction Co. 109
Bass, G. A. 108, 111
Bendix Machinery Co., Inc. 108
Boston Metals Co. 107
Builders Steel Supply Co. 108

California State Personnel Board 105
Chemical Co. 110
Cleveland Vocational Bureau, Inc., The 105
Commercial Metal Co. 109
Commercial Metals Co. 108
Concrete Equipment Co. 108

Darien Corp. 109
Davidson Pipe Co., Inc. 110
Davis Construction Corp. 106
Davis, S. M. 110
Deatherage & Son, Inc., George E. .. 106

Engineering Agency 104
Eveready Supply Co., The 107

Fisher Associates 107
Foster Co., L. B. 109
Frank, M. K. 108
Frazier-Davis Construction Co. ..107, 109

Groves & Son, S. J. 108

Hunsburg Machinery Inc. 106
Hyman-Michaels Co. 107, 108, 110, 111

Indian Grave Drainage District 111
Iron & Steel Products, Inc. 107

Kelly Pile Driving Co. 106

Maryland State Roads Commission .. 105
Mason & Bacon Co., Inc. 111
Masters Contracting Corp. 111
Matlow Corporation 106
McCarrick Bros. 107, 109
Midwest Steel Corp. 108
Mississippi Valley & Equipment Co. 109

National Machinery Co. 106

Orshek, Inc., Francis R. 110

Park Steel & Iron Co. 109

Quakertown Brick & Tile Co., Inc... 106

Reading, Inc., Eugene P. 110
Ruby, Forrest 106

San Carlos, City of 105
Serodino Inc., V. P. 108
Shannon & Co., J. Jacob 109
Smith Co., H. Y. 106
Smith Inc., L. B. 111
Stone the Crane Man 110

Tagco Inc. 110
Toledo Testing Laboratory 104
Tractor & Equipment Co. 107
Tuller Construction Co., The 110

United Tractor & Equipment Corp. .. 110

Vilbro Equipment Co., Inc. 110

Wenzel Machinery Rental & Sales Co. 110
Wepco Equipment Co. 106
Wilson Engineering Corp. 106

POSITIONS VACANT

WANTED—GRADUATE Civil or Structural engineer as field representative, Ohio, by long established engineering, promotional and educational organization. Give resume of education, engineering experience and salary requirements. Prefer age 25-45. P-3450, Engineering News-Record.

WANTED—EXPERIENCED Draftsman for plate and structural work. Location desirable small city in North Carolina. Please give full particulars and expected pay rate first answer. P-3626, Engineering News-Record.

WANTED IMMEDIATELY Superintendent thoroughly experienced to supervise on large canal and levee project in Southeast. Must be good organizer, producer, know men and equipment. Write stating qualifications. P-2925, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

CIVIL ENGINEER with sales experience has good opportunity in Pittsburgh territory with large manufacturer in construction field. Must have C.E. degree. Should have experienced contacting engineers and contractors. State qualifications in first letter. SW-3625, Engineering News-Record.

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CIVIL ENGINEER—3 years field experience as construction engineer and ass't. superintendent on new construction and alterations. Seeking position with Consulting Engineer or builder providing opportunities in and around New York City. PW-3645, Engineering News-Record.

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(Continued on page 106)

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FS-3474, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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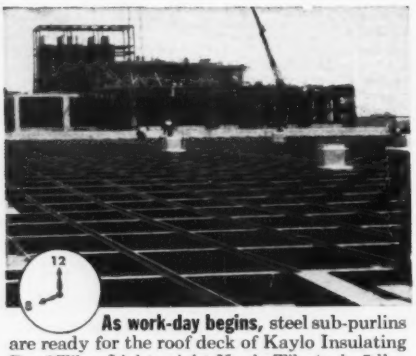
Engineering design and construction tests run from MOBILE LABORATORY UNITS at construction site.
Field load bearing tests.

193 West Shore Ave., Bogota, N. J.
Bogota-Hubbard 7-4408

Speed—ON DECK...

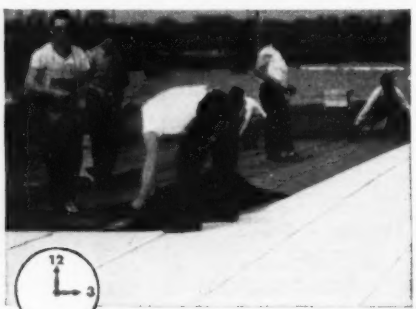
15,000 square feet of roof completed in *8* hours with Kaylo Insulating Roof Tile



As work-day begins, steel sub-purlins are ready for the roof deck of Kaylo Insulating Roof Tile. Lightweight Kaylo Tile (only 5 lbs. per sq. ft.) permits the use of lighter and more economical structural members and foundations.

Placing of tile begun at 8 o'clock, is well under way by mid-morning. Kaylo Roof Tile—a hydrous calcium silicate, *not glass*—has billions of sub-microscopic air spaces giving it light weight and low thermal conductivity.

Grouting of end joints, including cleaning off excess grout, begun shortly after first tile were placed, is almost finished. Kaylo roof deck is incombustible; has more than adequate strength for typical roof loads.



Final Step. Covering of the Kaylo roof deck with conventional built-up roofing materials was started as soon as the first section had been grouted. By 4:30, 15,000 sq. ft. of roof has been finished in an eight-hour work-day.

For complete details on Kaylo Insulating Roof Tile, write Dept. N-223, Owens-Illinois Glass Company, Kaylo Division, Toledo 1, Ohio.

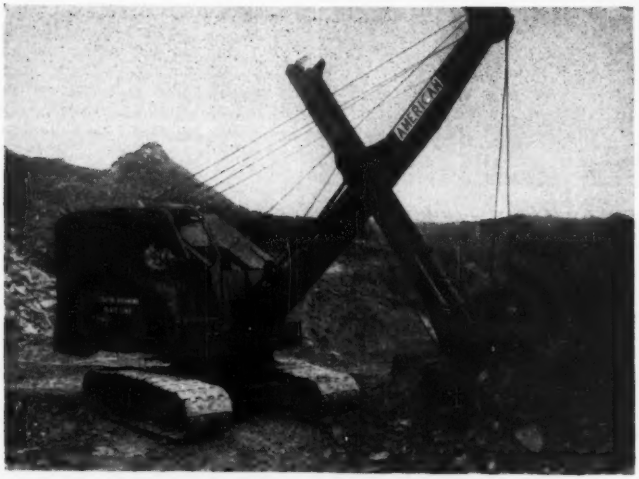
SEE OUR CATALOG in SWEET'S FILE

KAYLO®

... first in calcium silicate

...pioneered by OWENS ILLINOIS Glass Company

MAIN OFFICE: TOLEDO 1, OHIO—KAYLO SALES OFFICES: ATLANTA • BOSTON • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND DETROIT • HOUSTON • MINNEAPOLIS • NEW YORK • OKLAHOMA CITY • PHILADELPHIA • PITTSBURGH • ST. LOUIS • WASHINGTON



American Hoist's ¾-yd shovel has controlled boom lowering

American Hoist has just made a formal re-entry into the shovel field with its completely new ¾-yd rig, also available with a crane, dragline or pull shovel front. Known as Model 375 BC, it follows the same basic American design used in their huge 80-ton capacity locomotive crane and 100-ton revolving crane in that the machinery platform is an integral welded steel unit, rather than the conventional cast center with bolted-on walkways. Track pads of the 45,000 lb machine are double walled, special steel castings with full length pins, and to the company's knowledge there has been no record of a broken pad in the last 5 yr. A special lightweight alloy steel is used in the boom to eliminate dead weight. The high speed boom hoist, by the way, has as standard equipment a controlled lowering arrangement. The boom lowers against engine compression and can be controlled by the operator at any desired speed. Maximum lowering speed is therefore the same as maximum raising speed, assuring absolute safety. Ball joint rod end bearings are used in the hoist, swing and travel linkage system and anti-friction bearings in the brake linkage system. This reduces the operator's pedal effort approximately 60% and gives him a beter feel of the brakes. An electric push button operates the dipper trip. The new line will be sold through authorized American distributors.—American Hoist and Derrick Company, St. Paul 1, Minn.

Tungsten carbide bits

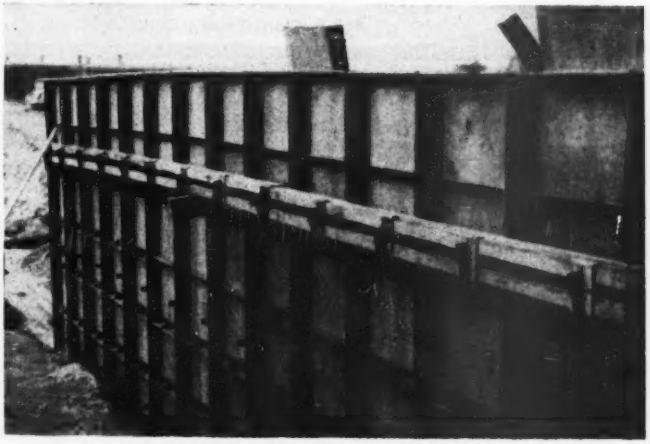
Here is a new complete line of tungsten carbide bits, known as Brunner & Lay Rok-Bits. They are for use with drill steels on wagon drills, jackhammers, stopers and drifters. The tungsten carbide cutting edges are of one of the hardest materials known, can drill quickly and remain sharp to a degree far superior to standard steel edge bits. They are supplied in all standard sizes from 1¼ in. to 4 in. and to meet all requirements. Further, they are offered in the four-point cross type and in the two-point chisel type. Shoulders of the bit are accurately formed for full support by the drill steel shoulder, to maintain alignment and to transmit impact directly to the steel without strain on the thread. Brunner & Lay, Inc., 9300 King Street, Franklin Park, Illinois.

Unit forms require minimum of handling

Atlas Compo Forms (shown below) are assembled square edge units consisting of a welded steel frame with an exterior grade or plastic coated plywood face. Panels are easily reversed and are supplied in 12-, 16-, 18- and 24-in. widths in variable heights from 4 to 10 ft. Completely interchangeable, with no rights or lefts, they can be used in combination of various sizes for any height required. After they are stripped from the walls, they can be laid across joists for a second use in slab construction.

Any single panel can be removed after wall erection without disturbing the rest of the form. This permits installation of pipes, sleeves, boxes, etc. One-piece key wedges are used to lock form panels securely together and at the same time engage and space the wall tie. The flat bar ties have wall

(Continued on next page)



FAST and Economical!

with a one man

The ¾ cu. yd. Sauerman Power Scraper pictured above keeps screening plant supplied with material that it scoops out of a wide bank of gravel. Cost is under 10c for each cubic yard of gravel handled.

SAUERMAN SCRAPER

When you own a Sauerman Power Drag Scraper you can tackle any job of gravel excavation, cut-and-fill, earth dam construction, stripping, stockpiling and similar work with the assurance of producing big output at minimum expense.

A Sauerman scraper digs a heaping load, hauls this load to any point within its operating radius, dumps automatically, then returns at high speed to dig another load.

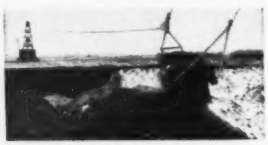
Operation and Upkeep Are Simple . . .

The operator of a Sauerman Scraper has control of everything at his fingertips. Any workman is easily trained for the job. Power consumption is small. Installation and upkeep costs are surprisingly low.

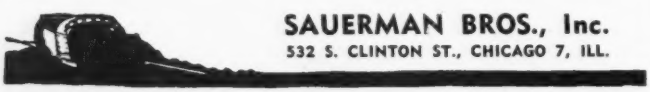
Sauerman scrapers have been "tops" in the field of long range excavators for over forty years. Whether you buy one of our smallest machines or one of our largest, you obtain an expertly engineered unit guaranteed to take care of your particular work economically and to give you long, trouble-free service.

Write for the new 24-page Sauerman scraper catalog and tell us about your material handling problems.

Small Sauerman scraper ranges across waste pile of coal screenings, 100 ft. high, several acres in area, drags the screenings down to a washery.



On a job of stripping deep overburden from a deposit over 1,000 ft. wide, the Sauerman scraper bucket is provided with a carrier which runs on a track cable. This speeds up the operating cycle.



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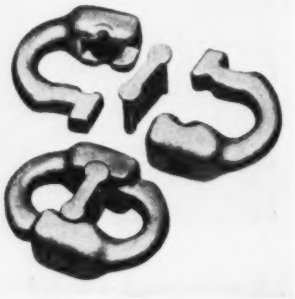
"Gunite" . . . . . the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

New products . . .

sizes stamped on each end and are reversible, saving time in handling. They space the wall, insure accuracy and provide a means of securing wood liners. With a quick, easy break-back, they eliminate all washers and leave only a very small opening in the concrete. The manufacturer claims that these forms need only one side waler alignment and no special skill or tools for erecting or stripping. IRVINGTON FORM & TANK CORPORATION, 20 VESEY STREET, NEW YORK 7, NEW YORK.



Safety connecting links for chains

The photo here shows Wedglok safety connecting links, disassembled (top) and assembled. Tensile strength of the Wedglok links exceeds published strength of comparable alloy chain. The spacer is in compression when the link is carrying a load, and it will not shear or loosen if the projecting spacer points are properly peened. With just two sizes of links, connections can be made for a very broad range of chain sizes. Equally efficient for permanent connections or for quick emergency repairs, they can be assembled anywhere without special equipment. INTERSTATE DROP FORGE COMPANY, MILWAUKEE, WISCONSIN.

Rubber-tar blend stops asphaltic pavement dissolving

One of the problems besetting airfield designers and maintenance contractors alike is the softening of runways and taxi strips by jet fuel spillage. They can now be protected with a coating of new plasticized synthetic rubber and tar blend called Surfa-Aero Sealz. Test strips have been installed at Hunter Air Force Base, Savannah, Ga. on a 900-ft section of runway and on a taxi strip.

Jet planes use a kerosene type fuel which, when spilled on asphaltic

(Continued on page 119)

Ramset cuts costs again

with new Tru-Set Fasteners

"Red-Tip Pilot" Line, at reduced prices, leads the way to still greater economies in steel and concrete fastenings . . .

"Better than ever" say building contractors, about the newly developed RAMSET® Tru-Set Fasteners. "They set straight as an arrow and slick as a whistle. With that Red-Tip Pilot and those reduced prices, we'll stick to RAMSET for our fastening work in steel and concrete, and wherever else we can use it."

Lower prices on this latest technological development are gained from the new design and greatly increased sales volume. Then, a close-to-perfect percentage of accurately-seated fasteners results from the elasticized Red-Tip Pilot, which guides the fastener *straight* through the barrel into the work. For construction fastenings, nothing sets like RAMSET.

Fasten 15/1 Faster with RAMSET SYSTEM

You beat the time by 15 to 1 for most fastening jobs by using RAMSET SYSTEM instead of old-fashioned methods. If you are not already profiting from these time-saving, money-saving advantages, ask for demonstration. Our nation-wide network of capable dealers provides fast, on-the-job service and suggestions. Take a moment now, to ask for details.

Ramset Fasteners, Inc.

Pioneer in powder-actuated fastening

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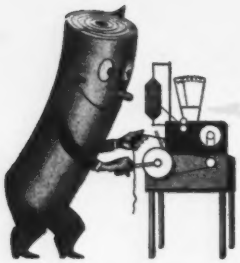

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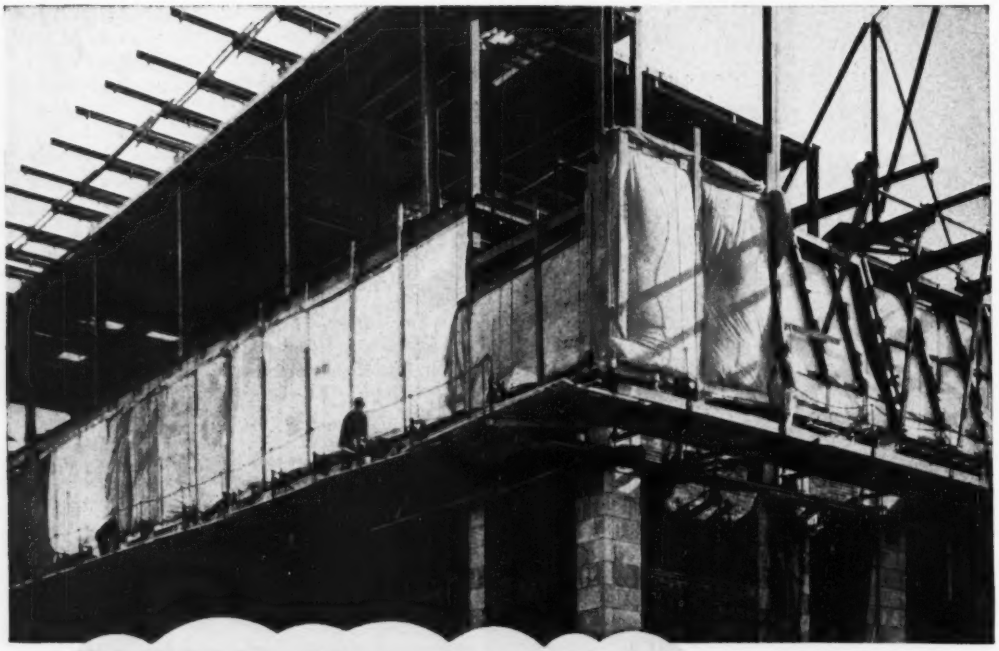
In TARPAULINS

ives You Greater Fabric Uniformity

Checking evenness of roving with Belger Tester. One of a series of comprehensive laboratory controls throughout production to assure uniformity in all Mt. Vernon-Woodberry products.



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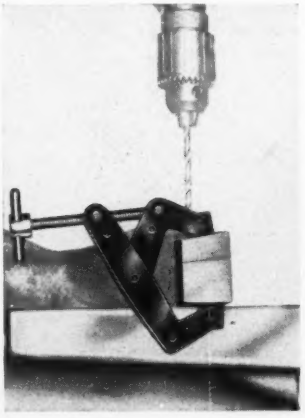
cement pavements, has a dissolving effect. The pavement gradually disintegrates and is rutted or stripped away by the wheels of heavy planes. Flying fragments, kicked up by planes taking off, are hazardous to following planes. This spillage usually occurs on parking stands, taxi strips, and on the initial 500 ft of runway just before takeoff. In many cases these pavements are made of asphaltic cement. The new rubber-tar blend is unaffected by searing jet blasts which range in temperatures from approximately 160 deg F to 300 deg F and higher. The product is shipped to construction sites in drums, tank cars or tank trucks, where it is mixed with aggregate by the regular hot mix plant procedure. It can be laid with regular paving equipment, then rolled and compacted with tandem rollers. A coating of 1 in. to 1½ in. is applied to asplaltic cement pavements. NAUGATUCK CHEMICAL DIVISION, U. S. RUBBER COMPANY, ROCKEFELLER CENTER, NEW YORK 20, N. Y.



New clamping principle

A newly perfected principle in clamping has been recently introduced which combines the best features and strength of a standard drop forged "C" clamp and a toolmaker's parallel clamp. A ball-bearing trunnion in the new clamp eliminates distorting, twisting action. It also absorbs vibration, insuring a firm, steady grip throughout any operation. There is no unsupported screw or loose pad to "walk off" the center when pressure is applied against the anvil. Three different gripping faces are built into the clamp to accommodate all types of holding jobs. This single clamp is ideally suited for rough welding,

(Continued on page 122)

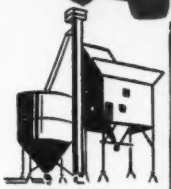
Heltzel BUILDS IT BETTER

GEARED TO YOUR PRODUCTION NEEDS

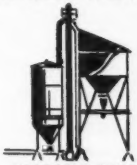
Engineered FOR THE JOB

●Heltzel-engineered equipment provides that element of efficiency so important when man hours count highly. Each product in the Heltzel line is backed by 40 years experience in the concrete industry. Contractors and concrete producers know that Heltzel builds quality, high performance equipment. It stands the test of time and rugged operating conditions. Some of the Heltzel line of products are pictured here.

Specific information on any Heltzel equipment may be had by writing to our Warren office or contacting your nearest Heltzel distributor.

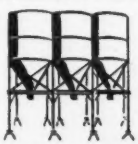


STATIONARY BATCHING PLANTS



PORTABLE BULK CEMENT PLANTS

PORTABLE AGGREGATE PLANTS



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WARREN, OHIO

Mobile CONCRETE MIX PLANT

21-FOOT discharge

(HIGHER WITH SPECIAL BOOM)

KOEHRING 16-E *twinbatch*,

with 6 m.p.h. rubber-tired mobility and high elevating boom, has unlimited application on all types of concrete construction work . . . for buildings, retaining walls, pilings, culverts, bridges, tunnels, widening highways and airport strips, batching into trucks, etc. Bucket rides on 60° elevating boom . . . discharges controlled batch into overhead forms, hoppers or chutes at a dumping height of 21 feet (higher with special boom). Boom also swings in an arc of 160° . . . speeds pouring of floors, foundations. This heavy-duty 16-E easily mixes and distributes up to 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing controlled by Koehring Batchmeter, and vertical syphon-type water tank, all assure consistent, maximum-strength concrete at top batching speeds.

Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

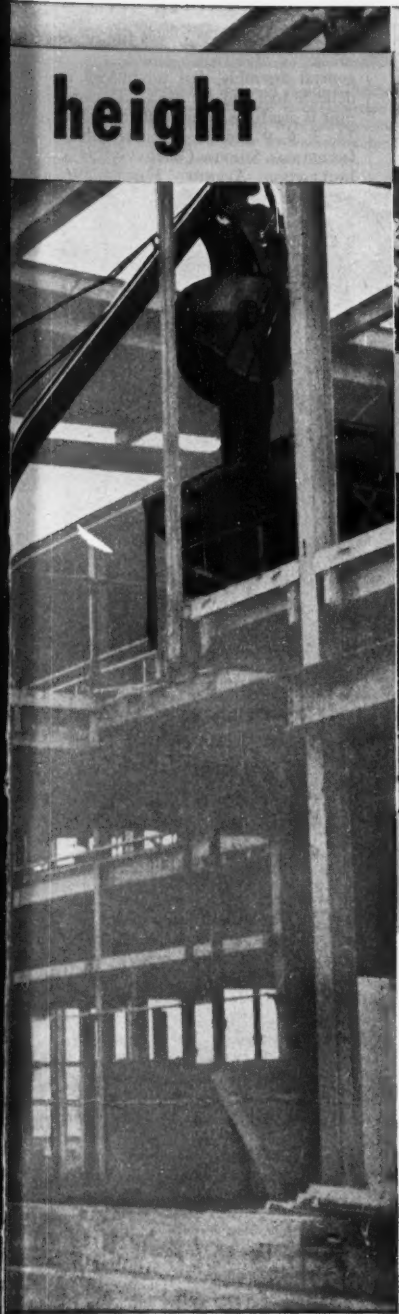
KOEHRING CO., Milwaukee 16, Wis.
(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX)

KOEHRING HEAVY DUTY

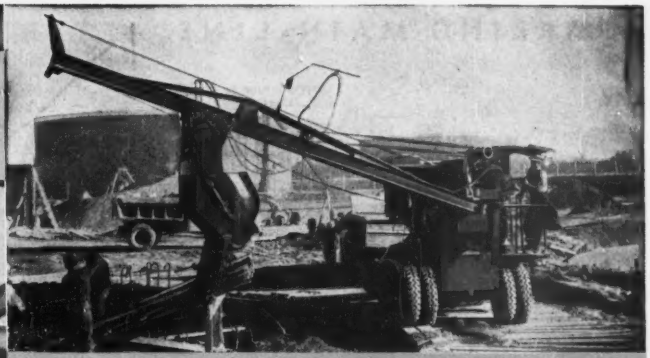
KOEHRING 16-E *twinbatch*®

PAVERS • FINISHERS • CONSTRUCTION MIXERS • CRANES • EXCAVATORS • DUMPTORS® • MUD-JACKS® 6279

height

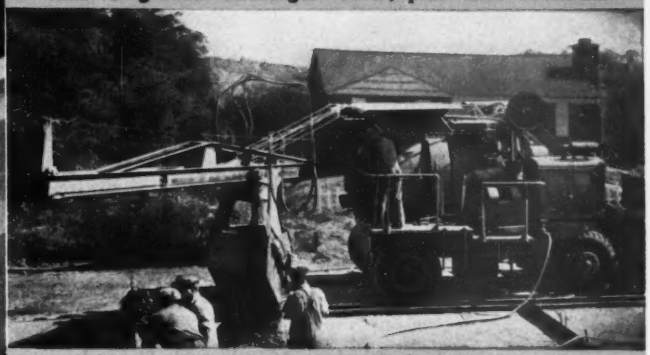


Ask, too, about production advantages of big 34-E *twinbatch* and Longitudinal Finisher for highway, airport, other major paving jobs.



CONTROLLED-DISCHARGE BUCKET

has clamshell-type door, hydraulically controlled . . . can be opened or closed at any time for gradual discharge. 24 cu. ft. water-level capacity is more than ample for the full 16 cu. ft. concrete batch, plus 10% overload.

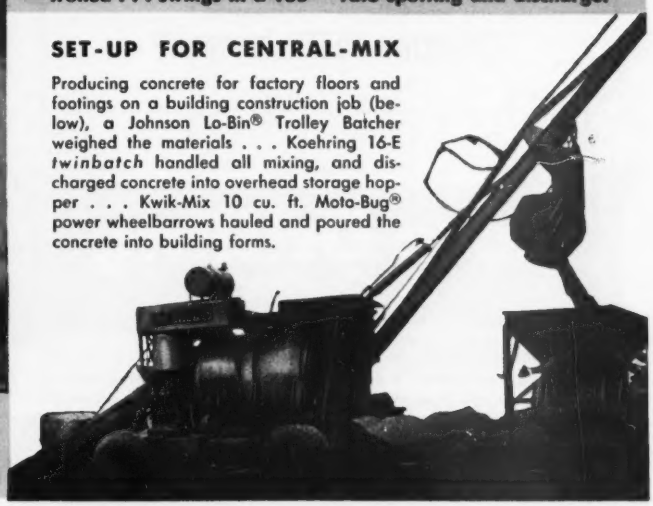


BOOM SWINGS IN 160° ARC...

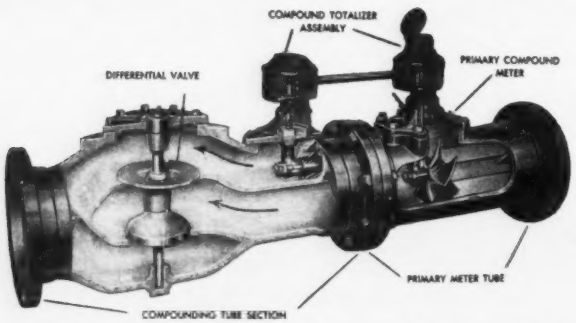
. . . double-channel distributing boom on the Koehring 16-E *twinbatch* is power controlled . . . swings in a 160° arc, elevates 60° . . . is self-locking and holds securely in any position for accurate spotting and discharge.

SET-UP FOR CENTRAL-MIX

Producing concrete for factory floors and footings on a building construction job (below), a Johnson Lo-Bin® Trolley Batcher weighed the materials . . . Koehring 16-E *twinbatch* handled all mixing, and discharged concrete into overhead storage hopper . . . Kwik-Mix 10 cu. ft. Moto-Bug® power wheelbarrows hauled and poured the concrete into building forms.



SPARLING MAIN-LINE METERS



Differential valve cracks at about one pound per square inch back pressure from the smaller meter. The smaller meter measures all flows below the minimum accurate range of the larger meter. Both meters drive through ratchet clutches to a common totalizer, which thus operates with the faster turning meter.

The COMPOUND with Flow-Ranges as Wide as 1 to 125

- Accurate Measurement on Low Flows as well as on High Flows
- One Totalizer and no sharp cut-over point
- Conserve Pressure—See Bulletin 311 for low-loss-curves.
- Sizes 6-inch to 36-inch, with Flanged, Bell and Spigot ends.

Quotations and Bulletin 311 come at your request

SPARLING METER COMPANY
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Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures. *Core Drill Contractors for more than 60 years.*

JOY MANUFACTURING CO.
Contract Core Drill Division • MICHIGAN CITY INDIANA

New Products . . .

general assembly, fast production or delicate tool and die work. The new unit is available in five different sizes; 1½, 3, 6, 9 and 12 in. CENTINELA INDUSTRIAL SUPPLY COMPANY, 11930 INGLEWOOD AVENUE, HAWTHORNE, CALIFORNIA.

Electric gluing unit spot welds plywood panels

After several years of study by its engineers, architects and chemists, the United States Plywood Corp has endorsed a new portable, high-frequency electric gluing unit that actually "spot welds" plywood wall panels in place within a matter of minutes. The new welding method completely eliminates use of exposed surface nails and causes glue to set almost instantaneously. According to company technicians, the completed installation assures perfectly flush joints which are hardly distinguishable from custom jobs.

Employing the conventional system of erecting plywood paneling, nails or small brads are used to hold the panel temporarily in place while the glue sets. Using the high-frequency electric gluing unit, the spot welds take the place of nails while glue in intervening areas set naturally. Recommendations call for a weld wherever a nail or brad would customarily be used.

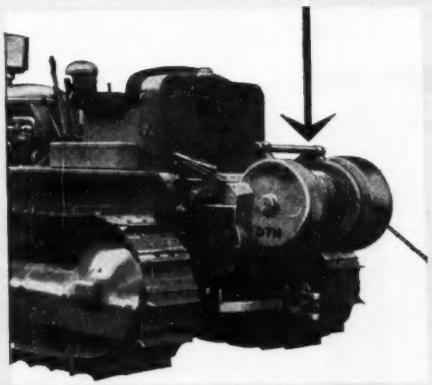
An alternative method is to nail plywood sheathing to studs and spot weld the ¼-in. hardwood plywood to this sheathing. By using this method, the entire back of the hardwood plywood is coated with glue and the high-frequency unit is used to apply the welds, again wherever a nail or brad would ordinarily be required. Con-

(Continued on page 124)

Winching out, and simultaneously loading, a scraper outfit on a construction project in Tennessee. Hyster D7N towing winch mounted on a Caterpillar D7 tractor equipped with 7S dozer and front cable control.

...Don't let mud **bog down** your operations

HYSTER Winches have *R-E-A-C-H* and *Pull Power* for any construction job...



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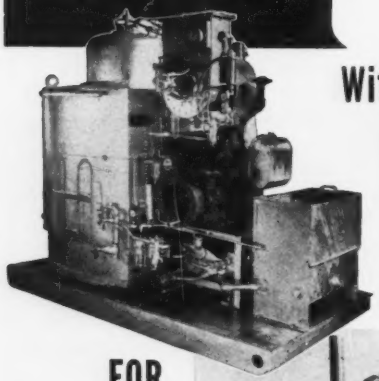

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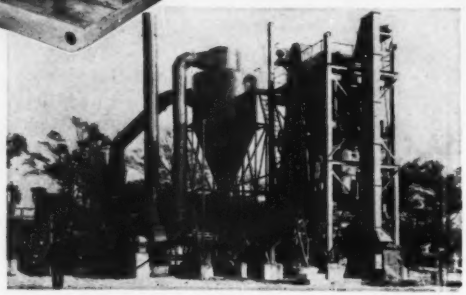

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ventional plastic resin glues are used.

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(Continued on page 126)

ESCO dozer blade and end bits on Caterpillar D8 tractor, working on power project for Aluminum Company of Canada in British Columbia.

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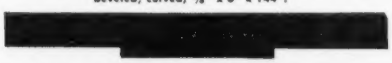
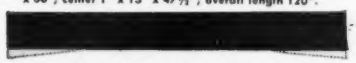
ESCO Blade LA 620, 3-piece, 1" x 10" x 127¾", with Shasta type bit LA 6225.

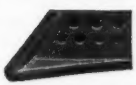
ESCO grader or scraper blade LA 1303; 3-piece, double beveled, curved, ⅝" x 6" x 144".



ESCO blade LA 506; 3-piece with drop center; ends 1" x 10" x 36"; center 1" x 13" x 47½"; overall length 120".



ESCO heavy duty blade LA 642; 4-piece, 1" x 11½" x 108⅜". Dotted lines show optional end blade shape.



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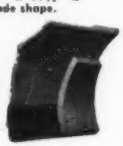
Plain type end bit.

Cast of wear-resisting alloy steel with heaviest metal sections placed where wear is greatest.



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ADVERTISERS IN THIS ISSUE

American Hoist & Derrick Co. 4, 5
Arkwright Finishing Co. 73
Atlantic Steel Corp. 93
Austin-Western Co. 127
Autocar Co. 22

Barco Mfg. Co. 95
Bay City Shovels, Inc. 18
Bethlehem Steel Co. 1
Blaw Knox Div., Blaw Knox Co. 46
Broderick & Bascom Rope Co. ..... 4th Cov.
Brunson Instrument Co. 86
Butler Mfg. Co. 63

Carlon Products Corp. 39
Casey & Case Foundation Co. 94
Celotex Corp., The 33
Cement Gun Company 116
Chain Belt Co. 9
Cleaver Brooks Company 76
Commercial Shearing & Stamping Co. 35

Dodge Corp., F. W. 76
Dravo Corp. 96

Electric Steel Foundry 125
Electric Tamper & Equipment Co. 46

Faber-Castell Pencil Co., A. W. 31
Fairbanks-Morse Co. 92
Flexible Road Joint Machine Co. 49
Foote Co., Div., Blaw Knox Co. 44
Ford Motor Co. 7
Foster Co., L. B. 81
Franki Foundation Co. 124

Galion Allsteel Body Company 3
General Electric Company ..... 2nd. Cover
Greenlee Tool Co. 40
Griffin Wellpoint Corporation 81
Gulf Refining Co. 8
Gunite Concrete & Construction Co. 77

Hayward Company 87
Heil Company, The 74, 75
Heltzel Steel Form & Iron Co. 119
Hyster Co., The 123

Independent Pneumatic Tool Co. 15
Insley Mfg. Corp. 14
International Harvester Co. 90
Irvington Form & Tank Corp. 86

Jackson Vibrators, Inc. 46
Jaeger Machine Co. 76
Johns-Manville Corp. 82, 83
Jones & Laughlin Steel Corp. 71
Joy Mfg. Co. 122

Keuffel & Esser Co. 50, 51
Koehring Co., The 120, 121
Koppers Co., Wood Preserving Div. 48

LaCrosse Trailer Corp. 37
LeTourneau, Inc., R. G. 66, 67
Littleford Bros., Inc. 124

Macomber, Inc. 99
McCaffery-Ruddock Tagline Corp. 78
McGraw-Hill Book Co. 32
McKinney Drilling Co. 86
Mir-O-Col Alloy Co. 6
Municipal Service Co. 87

Open Steel Flooring Institute, Inc. 72
Owens-Illinois Glass Co. 114

Peerless Pump Div. of Food Machy. Corp. 85
Petersen Engrg. Co. 35
Phoenix Bridge Co. 87
Piper Aircraft Corp. 20
Pittsburgh Steel Products Co. 43

Plasteel Products Co. 93
Porter, Inc., H. K. 10

Ramset Fasteners, Inc. 117
Raymond Concrete Pile Co. ..... 3rd. Cover
Republic Steel Corp. 59
Robertson Co., H. H. 89
Rockford Clutch Div., Borg-Warner 77

Sauerman Bros., Inc. 116
Sika Chemical Corp. 36
Socony Vacuum Oil Co. 12, 13
Sparling Meter Co. 122
Spencer, White Prentis, Inc. 92
Sprague & Henwood, Inc. 77
Standard Dry Wall Products 30
Stone & Webster Engineering Corp. 64
Stoody Company 54
Symons Clamp & Mfg. Co. 38

Trailer Village, Inc. 92
Turner-Halsey Company 118

Union Metal Mfg. Co. 80
Union Wire Rope Corp. 41
United Steel Fabricators, Inc. 91
Universal Manufacturing Co. 11

Viber Co. 34

Wild Surveying Instrument Supply Co. of Amer., Inc., Henry 2
Winslow Government Standard Scale Works, Inc. 94
Wooldridge Mfg. Co. 16

Yeomans Brothers Co. 47

Professional Services . . . 111, 112, 113

SEARCHLIGHT SECTION

(Classified Advertising)

H. E. HILTY, *Manager*

Employment
Positions Vacant 104-105
Positions Wanted 105, 106
Part Time Work 106
Employment Agencies 104
Employment Service 105

Educational
Schools 106

Business Opportunities
Offered 106

Notices
Proposal 100-103

Equipment
(Used or Surplus New)
For Rent 108
For Sale 106-111
Piling 109
Pipe 110
Rail 108

Wanted
Equipment 106

ADVERTISERS INDEX 104

ENGINEERING NEWS-RECORD

D. S. ROBERTSON, *Adv. Sales Manager* — HOWARD T. OLSEN, *Assistant Manager*

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Surveying Instruments and Accessories—Bulletin No. 1052 of the David White Co. is a 42-pager showing with pictures and descriptions the complete line of engineers', surveyors' and builders' instruments and accessories. An interesting center insert is titled "The Advantages of Coated Lenses" and shows in three colors the difference in light passage through coated and uncoated types. DAVID WHITE CO., 315 W. COURT STREET, MILWAUKEE 12, WISCONSIN.

Shone Pneumatic Ejectors—In handling sewage and industrial wastes the gallonage to be pumped determines the equipment to be used. As this gallonage scales down, a point is reached where good engineering switches from a centrifugal sewage pump to the pneumatic ejector. Solids-carrying liquids often overtax centrifugal pumps and clog impellers. This company manufactures both and can advise anyone troubled with crude sewage, sludge and industrial wastes just how to proceed. Installation of a Shone ejector is particularly appropriate where compressed air is already available. Bulletin 4000-C describes simple operation, different type ejectors available, tankless and storage types and typical specifications. YEOMANS BROTHERS COMPANY, 1433 NORTH DAYTON STREET, CHICAGO 22, ILLINOIS.

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Biggest flood could have been worse

More will soon be heard in the halls of Congress about the great Kansas flood of last summer (ENR July 19, 1951, p 23 and July 26, p 25). What it did in discharges and dollar damages and what it will cost to protect against its recurrence has now been determined by the Corps of Engineers. Brig. Gen. C. H. Chorpening, assistant chief of engineers for civil works, revealed the final figures March 7 in a paper before the American Society of Civil Engineers' convention in New Orleans. They provide a needed perspective.

In the first place, prolonged meteorological and flood routing studies only bolster the early descriptions of the flood as the nation's biggest and most costly. Here is the score: Evaluable tangible damages totaled $725 million in the Kaw River Basin, $118 million in the lower Missouri River Basin and $33 million in the Osage River Basin; flooded farm land in the three basins totaled respectively 900,000 acres, 709,000 acres and 391,000 acres; the crest of the Kaw River flood was 250 miles long instead of merely being the usual wave that passes down a flooded stream; and this crest produced progressive discharges downstream of 330,000 cfs at Junction City, 440,000 cfs at Manhattan, 480,000 cfs at Topeka and 510,000 cfs at Kansas City.

• **Facts**—Here is ample support for superlatives, for the previous biggest measured flood, in 1903, produced a discharge at Kansas City of only 260,000 cfs. Even the estimated discharge of the great flood of 1844—witnessed mostly by Indians and a few trappers—was only 360,000 cfs.

But the most startling fact, brought out by the meteorological studies, is that if the storm center had moved only a few miles to the north, it would have produced a 676,000 cfs discharge at Kansas City. This is the figure that engineers must now work with, and it is the one used in determining that the 17 reservoirs and 14 local levee units in the original Kaw River plan should be supplemented by 17 more reservoirs and 2 more levee units (ENR Dec. 20, 1951, p 25).

Flood control costs piles of money. Is it worth it? That is what must be decided, and General Chorpening cited figures that bear on the decision. The two reservoirs, already completed in the flooded part of the Kaw River basin, at Kanopolis and Cedar Bluffs, are estimated to have prevented $4,600,000 damage. Substantial protection was also afforded by the local protective works at Topeka and Kansas City, particularly in keeping the water supply and power plants in operation. Had these facilities been lost, damage figures would have mounted steeply. As it was, the Kansas City floodwalls and levees are estimated to have saved $265 million in flood damages. The total saving figure for the whole basin, attributable to existing flood control facilities, was set at $291 million by General Chorpening.

• **More savings**—Had the whole original flood protection scheme been operating, the savings would have been commensurately greater—"would have equalled a substantial portion of their cost" is the way General Chorpening stated it. That cost has been given in previous reports as $350 million.

But even though these flood control facilities would have cut 150,000 cfs off the discharge and 5 ft off the crest of the 1951 flood at Kansas City, the water would have reached the top of all of the existing and recommended floodwalls and levees along the Kaw River. This might be tolerable were it not for the specter of a possible discharge one-third greater than that of 1951—foreseen in the transposition of last summer's storm to a more critical position relative to the watershed. It was as a consequence of this possibility that the enlarged program of reservoirs and local protective works was drawn up.

With this program carried out, it is estimated that the reservoirs would provide enough control that the flow from a flood with a potential uncontrolled discharge of 676,000 cfs at Kansas City would be within the local protection works at the main damage centers of the recent flood. This enlarged program, however, increases the cost of Kaw Basin flood control 100%—that is by another $350 million. Of this amount 40% would go for reservoirs and 10% for local protection works.

• **Less damage**—The payoff, according to General Chorpening, is that these facilities, had they all been functioning in the 1951 flood, would have prevented damages on the order of $645 million, making the loss $231 million instead of $876 million. In addition, if the floods of the past 50 years, which caused an estimated $2.2 billion damage, were to be repeated in the next 50 years, the cumulative loss would be low enough to make the whole $700 million investment in control facilities a good one.

Mounting flood losses in modern times are largely the result of the great concentration of commerce and industry in the low areas in and around cities. Perhaps two-thirds of the damage from the 1951 Kaw River flood occurred in Kansas City. Much of the remainder is accounted for by the other 117 communities that suffered appreciable flooding.

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. . . or a *small* one?

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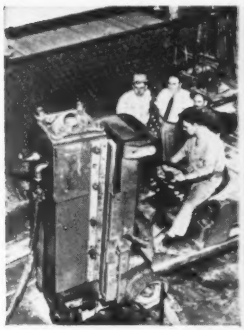

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